



UNIVERSITY OF  
LINCOLN

Representations of human directed  
aggressive behaviour of dogs in  
Western countries versus Japan

Mie Kikuchi

Doctor of Philosophy

2019

## **Acknowledgments**

I would like to dedicate this thesis to my husband, Norihiro Kikuchi, who has supported me for a long time in Japan and my parents, sister for their constant support from far away.

I would like to thank my supervisors Prof Daniel Mills and Prof Todd Hogue for all the guidance, constructive advice and suggestions over nearly 9 years. I could not have got here without your constant support and encouragement. Thank you.

I would like to thank my friend, Elizabeth Walsh who have supported me for a long period of time since we were in Companion animal behaviour counselling course at the University of Southampton, and my friend Fernanda Ruiz Fadel, Lucian Assis and Catia Caeiro and from the School of Life Sciences helped me enormously and kept me on my feet and encouraged me especially over the last few months. A special thanks to my friend, Annette Scally who supported revising my writing in English all the time and also encouraged me when I was having a difficult time.

I would like to thank my special friend, John Reilly who studied with me in the course at the University of Southampton and has advised me precisely every time what is important for achieving PhD from his professional career.

And finally, a special thank you to my dog Kotaro, who spent a lovely time together in the UK and taught me how wonderful life with a dog is. Thank you for my present dog June, who has been keeping company with me even when I was studying and encouraged me to keep going.

## Statement of originality

I hereby declare that this submission is my own work and to the best of my knowledge it contains no material previously published or written by another person. This submission contains no material accepted for an award of any other degree at any educational institution, except due to acknowledgment made in this thesis.

A modified version of Chapter 2 has been accepted for publication as a book chapter for the book “Dog Bites: a multidisciplinary perspective” edited by Daniel Mills and Carri Westgarth.

The content of Chapter 2 has been published the abstract in the Journal Scientific Reports under the following citation:

Kikuchi, M., Hogue, T., & Mills, D. S. (2014). Definition and management of human directed aggressive behavior of dogs in the UK and Japan. *Journal of Veterinary Behavior: Clinical Applications and Research*, 9(6), e9.

Kikuchi, M., Oxley, J., Hogue, T., & Mills, D. S. (2014). The representation of aggressive behavior of dogs in the popular media in the UK and Japan. *Journal of Veterinary Behavior: Clinical Applications and Research*, 9(6), e9.

---

Mie Kikuchi

Student ID 09155533

Date: March 7 / 2019

## Abstract

Human-directed aggressive behaviour is considered to be the most serious behaviour problem of dogs worldwide as people are seriously hurt and the dog is often euthanized or abandoned.

One important fundamental problem is that people may not perceive aggressive behaviour in dogs appropriately (based on scientific evidence). Therefore, it is argued that a motivation and emotion based consistent assessment for human-directed aggressive behaviour in dogs (HDAB) needs to be established. If there is no clear terminology for the description of aggressive behaviour in dogs, people may label a dog's behaviour according to their own evaluation, which may be affected by cultural difference such as belief, personality, and knowledge.

No previous research has attempted to investigate which cultural differences influence people's perception of HDAB. Therefore, the aim of this thesis explored the representation of people's perception of HDAB in Western countries versus Japan in order to try to establish a consistent HDAB assessment framework.

In the initial review of the scientific literature and the popular media, there were inconsistent or limited descriptions for motivation and emotion of dogs, e.g., describing emotion as mostly fear and anxiety. In the study of the popular media, differences in the styles of presentation were found between English and Japanese language respondents. The UK media presented information more as text rather than as photos or illustrations (low-context culture), while the Japanese media used more photos or illustrations than text (high-context culture). The style of presentation may affect people's understanding and perception of HDAB differently.

The Internet survey and video assessment study were developed to identify people's perception of HDAB and which cultural factors influence people's perception of HDAB. Both studies showed the respondents (particularly Japanese respondents) were less likely to recognise mild or subtle signs of dog's behaviour and recognised limited dog's emotions. As cultural factors, "nationality" and "level of handling experience with dogs" predicted strong effect on people's perception of HDAB.

In order to develop a consistent systematic framework to assess HDAB, power point intervention material which described the assessment based on dog's motivation and emotion was presented to the respondents. However, it did not have a significant effect on the participants' assessment of the dog's emotion, which may be affected by the way of presentation without adjusting the level of people's understanding or cultural factors, e.g., the role and value of dogs, handling experience.

This thesis demonstrates evidence that the lack of consensus for description of HDAB may influence people's perception of HDAB and cultural differences affects people's perception of HDAB. Therefore it is necessary to develop the consistent systematic framework for the assessment of HDAB based on dog's motivation and emotion and convey to experts and dog owners through both scientific literature and popular media. It will enhance appropriate communication between owners and dogs.

## List of contents

<b>Acknowledgments</b> .....	<b>1</b>
<b>Statement of originality</b> .....	<b>2</b>
<b>Abstract</b> .....	<b>3</b>
<b>List of contents</b> .....	<b>5</b>
<b>List of Abbreviations</b> .....	<b>9</b>
<b>List of Tables</b> .....	<b>10</b>
<b>List of Figures</b> .....	<b>15</b>
<b>Chapter 1:</b> .....	<b>17</b>
<b>A definition of human-directed aggressive behaviour in dogs, key elements of assessing it and cultural Factors</b> .....	<b>17</b>
1.1. Introduction.....	17
1.2. Defining “aggression” and “aggressive behaviour”.....	19
1.2.1. Concepts of aggression and aggressive behaviour .....	19
1.3. Three elements of aggressive behaviour .....	21
1.3.1. Context .....	21
1.3.2. Motivation.....	22
1.3.3. Emotion .....	24
1.4. The diagnosis of human-directed aggressive dog behaviour in the veterinary behaviour literature – an update .....	28
1.4.1. Description of “aggression” and “aggressive behaviour” .....	28
1.4.2. Classifications of HDAB.....	29
1.4.3. The importance of body signals .....	30
1.5. Cultural factors which may influence the perception of aggressive behaviour in dogs..	31
1.5.1. Attitudes .....	32
1.5.2. Belief, knowledge and expectations concerning dogs.....	36
1.5.3. Background experience of owners with dogs.....	42
1.6. Concluding comments .....	43
1.7. Overall aims and objectives .....	44
<b>Chapter 2:</b> .....	<b>46</b>
<b>Representation of HDAB in popular literature: books, magazines and the Internet in the UK and Japan</b> .....	<b>46</b>
2.1. Introduction.....	46
2.2. Methods .....	49
2.2.1 Resources .....	49
2.2.2. Data acquisition.....	50
2.2.3. Data Analysis.....	53
2.3. Results.....	53
2.3.1. Content analysis .....	53
2.3.1.1. The number of pieces of content (‘descriptions’) relating to HDAB in articles .....	53
2.3.1.2. Stage 1: No diagnostic terms or terms used for aggression .....	53
2.3.1.3. Stage 2: Reference to different elements of behaviour - motivation, emotion and context.....	55
2.3.1.4. Stage 3: Specific terms used to qualify aggression.....	57
2.4. Discussion.....	80
2.5. Conclusion .....	89

<b>Chapter 3:</b> .....	90
<b>Internet survey of cultural differences in dog management to human-directed aggressive behaviour of dogs in English and Japanese language populations</b> .....	90
3.1. Introduction.....	90
3.2. Materials and methods .....	93
3.2.1. Ethics statement.....	93
3.2.2. Questionnaire design.....	93
3.2.3. Participants recruitment and subjects .....	95
3.2.4. Data analysis .....	96
3.2.4.1. Demographics .....	96
3.2.4.2. Dog management factors .....	98
3.2.5. Statistical analysis .....	98
3.3 Results.....	112
3.3.1. Demographics differences.....	112
3.3.2. Collectivism and Individualism.....	117
3.3.3. Attitude towards aggression .....	119
3.3.3.1. What aggression means to the owner.....	119
3.3.3.2. Opinion on using physical punishment, verbal corrections and taking away privileges for children .....	120
3.3.3.3. Opinion for using physical punishment or verbal correction or taking away .....	122
3.3.3.5. Reaction to misbehaviour of a child and dog.....	125
3.3.3.6. The difference between two groups: violent reactions and non-violent reactions group for each of the 8 components from PCA .....	125
3.3.4. Attitude towards HDAB .....	128
3.3.5. The role and value of dogs .....	131
3.3.6. Type of information sought and source of knowledge .....	135
3.3.6.1. Type of information sought.....	135
3.3.6.2. Source of information .....	138
3.3.7. Handling experience of owners with dogs .....	140
3.3.8. Training methods.....	141
3.4. Discussion.....	142
3.4.1. Demographic differences .....	142
3.4.2. Collectivist or individualist tendency.....	142
3.4.3. Attitude towards aggression .....	143
3.4.4. Attitude towards HDAB .....	144
3.4.5. The value and role of the dog.....	145
3.4.6. Type of information sought and Source of knowledge.....	146
3.4.7. Handling experience of owners with dogs and training methods.....	147
3.5. Conclusion .....	147
<b>Chapter 4: Internet survey on cultural differences which affects</b> .....	148
4.1. Introduction .....	148
4.1.1. Perception of communicative signals related to aggressive behaviour .....	148
4.1.2. Perception of causes of HDAB .....	149
4.1.3. Perception of motivation and emotion .....	149
4.1.4. Important elements for the prevention of HDAB.....	150
4.1.5. The priority methods for the modification of HDAB.....	150
4.1.6. The hypothesis and aim.....	150
4.2. Materials and methods .....	151
4.2.1. Subjects and model design .....	151
4.2.1.1. Subjects.....	151
4.2.1.2. Questionnaire and model design .....	151

4.2.2. Statistical analysis .....	162
4.3. Results.....	163
4.3.1. Perception of communicative signals of aggressive behaviour.....	163
4.3.1.1. The elements of signalling of HDAB which people pay attention to.....	163
4.3.1.2. The behaviour in dogs which makes people consider them as aggressive..	164
4.3.1.3. Which signals people think may predict that a dog may bite.....	172
4.3.2. Perception of causes of HDAB .....	174
4.3.3. Perception of emotion and motivation of dogs in circumstances.....	179
4.3.3.1. Emotion.....	181
4.3.3.2. Motivation.....	182
4.3.4. Important elements of the prevention of HDAB .....	183
4.3.5. Prioritised methods for the modification of HDAB .....	185
4.4. Discussion.....	187
4.4.1. Perception of communicative signals of aggressive behaviour.....	187
4.4.2. Perception of causes of HDAB .....	189
4.4.3. Perception of emotion and motivation of dogs .....	190
4.4.4. The important elements of the prevention of HDAB .....	191
4.4.5. The priority methods for the modification of HDAB.....	192
4.5. Conclusion .....	193
<b>Chapter 5:</b> .....	195
<b>Experimental survey: video assessment to investigate the recognition of emotional factors in English and Japanese language respondents.....</b>	<b>195</b>
5.1. Introduction.....	195
5.2. Methods .....	197
5.2.1: Ethics statement .....	198
5.2.2. Participant raters and grouping.....	198
5.2.3. Data collection.....	200
5.2.3.1. The procedure of the video assessment.....	200
5.2.3.2. Questionnaire .....	201
5.2.3.3. Video clips.....	202
5.2.4. Statistical analysis .....	203
5.3. Results.....	205
5.3.1. Rating of the emotion of the dog in different circumstances .....	205
5.3.2. Results for the evaluation of triggers of the dog's response .....	207
5.3.3. The circumstance which explains the reason why the dog is displaying the behaviour.....	208
(Emotionally competent stimulus) .....	208
5.3. Discussion .....	211
5.4.1. The participants' assessment of dog's emotion.....	211
5.3.2. The factors which have an effect on respondents' understanding of emotion in dogs.....	212
5.3.3. Factors which may influence the results of the intervention.....	214
5.5. Conclusion .....	217
<b>Chapter 6: General discussion .....</b>	<b>218</b>
6.1. The fundamental problem which may arise related to HDAB.....	218
6.2. The presentation of popular media in UK and Japan.....	219
6.3. Cultural differences in dog management between English and Japanese language respondents.....	221
6.4. Internet survey for people's perception of HDAB and which cultural factors influence HDAB .....	223
6.5. Video assessment for the recognition of emotional factors in English and Japanese language respondents and implications related to the assessment .....	226



6.6. Limitations and future work.....	229
6.7. Conclusion .....	232
<b>Appendix Chapter 2.....</b>	<b>233</b>
<b>Appendix Chapter3.....</b>	<b>244</b>
<b>Appendix Chapter 4.....</b>	<b>283</b>
<b>Appendix Chapter 5.....</b>	<b>287</b>
<b>7. References.....</b>	<b>303</b>

## List of Abbreviations

HDAB	Human-directed aggressive behaviour in dogs
DFA	Discriminant function analysis
MRA	Multiple regression analysis
LAR	logistic regression analysis

## List of Tables

Table 2. 1. The number of media sources which were selected from UK and Japan on HDAB .....	50
Table 2. 2. Elements of aggression found in each media – (books, magazines, Internet sites) in UK and Japan. *the percentage of each element in each media was calculated by the total numbers of each element.....	56
Table 2. 3. Frequency of 2 element combinations of behavioural elements in each form of media in the UK and Japan .....	57
Table 2. 4. Classification, number, and ranking of specific aggression terms used in UK books.....	58
Table 2. 5. Classification, number, and ranking of specific aggression terms used in Japanese books .....	58
Table 2. 6. How articles used specific terms relating to motivation, emotion and context in 34 descriptions from UK books. ....	60
Table 2. 7. How articles used terms referring to motivation, emotion and context in 21 descriptions from Japanese books .....	64
Table 2. 8. Prevalence of qualifications of aggression relating to either motivation, emotion or context in UK magazines .....	67
Table 2. 9. Prevalence of qualifications of aggression relating to either motivation, emotion or context in Japanese magazines.....	67
Table 2. 10. How articles used the terms relating to motivation, emotion and context in UK magazines .....	68
Table 2. 11. How articles used the terms relating to motivation, emotion and context in Japanese magazines.....	70
Table 2. 12. Ranking of aggression qualifications relating to motivation, emotion and context on UK Internet sites .....	71
Table 2. 13. Ranking of aggression qualifications relating to motivation, emotion and context on Japanese Internet sites .....	72
Table 2. 14. How articles used the terms related to motivation, emotion and context on UK Internet sites to qualify aggressive behaviour .....	74
Table 2. 15. How articles used the terms related to motivation, emotion and context on Japanese Internet sites to qualify aggressive behaviour .....	77
Table 3 1. Summary of the demographic categories used in responses EQ=English questionnaire, JQ=Japanese questionnaire .....	97
Table 3 2. Summary of statistical analysis for responses related to “Dog management” .....	103

Table 3 3. Frequency of 11 demographics between English and Japanese language respondents.....	113
Table 3 4. The distribution frequency of total score of collectivism in English and Japanese language respondents .....	117
Table 3 5. Summary table for four items which may be related to “Collectivism and Individualism” in English and Japanese Language respondents.....	118
Table 3 6. Results of principal component analysis of 1776 respondents of both English and Japanese languages. Survey related to what constitutes aggression to the individual.....	119
Table 3 7. Results of principal component analysis of 1776 respondents in both English and Japanese languages. Survey related to using physical punishment or verbal correction or taking away privileges for children.....	120
Table 3 8. Summary of the results of principal component analysis of three questions related to attitude towards aggression. First column states the survey question name; second .....	121
Table 3 9. Results of principal component analysis of 1776 respondents in both English and Japanese languages. Survey related to the Opinion for using physical punishment or verbal correction or taking away privileges for dogs .....	122
Table 3 10. Results of Mann-Whitney U test between English and Japanese language respondents regarding each respondent’ total score of attitude towards children and dogs for 8 PCA components based on average rank score and <i>U</i> statistic, z-score and p-value. *LR=language respondents (Bonferroni correction was applied so the new threshold is specified in the column)...	124
Table 3 11. The distribution of the frequency for violent and non-violent group between English and Japanese language respondents for the item “Reaction if your child and dog did something wrong” and the result of Chi-square test.....	125
Table 3 12. Results of Mann-Whitney U test between the “non-violent” and “violent” groups’ regarding attitude towards children for 8 PCA components for both English and Japanese language populations based on average rank score and <i>U</i> statistic. z-score and p-value (Bonferroni correction was applied so the new threshold is specified in the column).....	126
Table 3 13. Results of Mann-Whitney U test between the “non-violent” and “violent” groups’ regarding attitude towards dogs for 8 PCA components based on for both English and Japanese language populations average rank score and <i>U</i> statistic. z-score and p-value (Bonferroni correction was applied so the new threshold is specified in the column).....	127

Table 3 14. Results of Mann-Whitney U test between the ‘Basic level of experience’ and ‘High level of experience’ regarding ‘Handling experience’ for both English and Japanese.....	140
Table 3 15. Results of Mann-Whitney U test between the ‘Positive reinforcement’ and ‘Positive punishment’ regarding Handling experience for both English and Japanese.....	141
Table 4 1. Summary of measurement items, scoring system and statistical analyses used for responses related to “People’s perception of HDAB”.....	153
Table 4 2. 1 demographics factors and 41 categories used for ‘General culture’ .....	159
Table 4 3. Eight factors related to ‘Dog management culture’ extracted from the online questionnaire about ‘Cultural differences on people’s perception if HDAB’ in and their respective 27 response elements .....	161
Table 4 4. The distribution of scoring for attention to each of the 6 possible body regions attended to in order to determine signalling HDAB.....	163
Table 4 5: Variables remaining in the stepwise discriminant function analysis for predicting whether an individual pays attention to all elements of signalling in HDAB or not.....	164
Table 4 6. Proportion of participants considering various signs as either ‘likely’ or ‘unlikely’ indicators of HDAB *the higher percentage of the group is used bold.....	165
Table 4 7. Summary of the results of the final model for the behaviour in dogs a) – i) of which makes people consider them as aggressive from the logistic regression analysis with the stepwise method (see methods for details). Significantly different ( $p<0.05$ ) categories are reported. *RC=Reference category .....	167
Table 4 8. Variables remaining in final stepwise multiple regression analysis of the total scores for prediction of dog bite signals.....	174
Table 4 9. Variables remaining in final stepwise logistic regression model for the most frequently chosen answer: “The dog is feeling threatened by the person”. *Only variables that had significant difference are shown. *RC=Reference category .....	175
Table 4 10. Variables remaining in final stepwise logistic regression model for second most frequently chosen response: “The dog is afraid of the person”. *Only variables that were important predictors are shown. *RC=Reference category .....	176

Table 4 11. Variables remaining and model outputs for the final stepwise logistic regression model for the top answer: “The dog is feeling threatened by the person”. *Only variables that had significant difference are shown. *RC=Reference category .....	177
Table 4 12. Variables remaining and model output for the final stepwise logistic regression model for the top answer: “The dog is frustrated by the prospect of losing something”. *RC=Reference category .....	178
Table 4 13. Summary of experts’ and participants’ assessment of emotion for 10 photographs. Photograph g) excluded from emotion in analysis.. *Note in photograph c) the participants disagreed with the experts.* Quite a strong consensus group (over 80%) =bold red, ambiguous level of consensus (30-60%, including closed %) = italic letters.....	180
Table 4 14. The respondents’ total score for agreement with experts for Emotion .....	181
Table 4 15. Variables remaining and model output for the final stepwise multiple regression model for emotion.....	181
Table 4 16. The respondents’ total score for agreement with experts for Motivation .	182
Table 4 17.Variables and model output remaining in final stepwise multiple regression model for motivation.....	182
Table 4 18. The distribution of the participants who selected the top three for the items of the important elements for the prevention of HDAB.....	184
Table 4 19. Variables and model output from the final stepwise logistic regression model for the important elements of the prevention of HDAB.....	184
Table 4 20. The distribution of frequency for the participants who selected top three for the items (order from top three answers) of the priority methods for the modification of HDAB.....	186
Table 4 21. Variables and model output from the final stepwise logistic regression model for the priority methods for the modification of HDAB .....	186
Table 5 1.The total scores of the intervention and non-intervention group for dog’s emotion.....	205
Table 5 2.Variables remaining in the final “Nationality” model , using one-way ANCOVA for analysis of participants’ rating of dog’s emotion.....	206
Table 5 3. Post hoc tests for nationality using Bonferroni correction of one-way ANCOVA for analysis of participants’ rating of dog’s emotion.....	206
Table 5 4. The total scores of Intervention and non-intervention group for triggers of the dog’s response .....	207

Table 5 5. Variables retained in the final “English / Japanese language respondents” and.....	208
Table 5 6: The total scores of intervention and non-intervention groups for emotionally competent stimulus.....	208
Table 5 7. Variables retained in the final model for nationality used in the ANCOVA for emotionally competent.....	209
Table 5 8. Post hoc tests for nationality using the Bonferroni correction of one-way ANOVA output for.....	210

## List of Figures

Figure 2. 1. Diagram of each stage in the survey.....	52
Figure 2. 2. Percentage of items with ‘No diagnostic terms’ relating to aggressive behaviour in different UK and.....	54
Figure 2. 3: Example of an article of a Japanese book.....	83
Figure 2. 4. Example of an article of a UK book.....	84
Figure 2. 5. Examples of an article from a Japanese magazine part 1 .....	85
Figure 2. 6. Examples of an article from a Japanese magazine part 2 .....	86
Figure 3. 1. Model of the relationship between general culture and dog management factors with people’s perception of HDAB by dogs (blue ovals). The diagram illustrates potential relationships between aspects of people’s perception of HDAB in dogs assessed in the survey and explanatory variables of interest. Items in the survey are given in the white boxes. Yellow boxes indicate demographic variables, red boxes are potentially important intermediate latent variables assessed from a range of items in the survey. Arrows indicate the flow from independent variable assessed in the survey through to the dependent variables assessed in the survey (white box, right hand side), with interactions between the three main factors of interest (blue ovals).....	93
Figure 3. 2. Dendrogram showing English language respondents for the grouping of 46 variables (1-0 binary score) for Q 1, 2, 3, 4 and 5 (attitude towards HDAB) RW=reaction for HDAB when walking a dog on lead in public, RT=reaction for HDAB taking a toy away from the dog.....	129
Figure 3. 3. Dendrogram showing Japanese language respondents for the grouping of 48 variables (1-0 binary score) for Q 1, 2, 3, 4 and 5 (attitude towards HDAB) RW=reaction for walking a dog on lead in public, RT=reaction for taking a toy away from the dog.....	130
Figure 3. 4. Dendrogram showing the grouping of 8 common variables (1-0 binary score) selected from .....	131
Figure 3. 5. Dendrogram showing English language respondents for the grouping of 57 variables (1-0 binary score) for The role / value of a dog. ADV=advantage having a dog, ImFacCho= important factor in choosing a dog, ST=spend time, Rel=relationship .....	133
Figure 3. 6. Dendrogram showing Japanese language respondents for the grouping of 55 variables (1-0 binary score) for “The role / value of a dog” .	



ADV=advantage, ImFacCho= important factor in choosing a dog, ST=spend time, Rel=relationship .....	134
Figure 3. 7. Dendrogram showing the grouping of 11 common variables (1-0 binary score) which were selected from the defined cluster within English and Japanese language participants for the role / value of a dog .....	135
Figure 3. 8. Dendrogram showing the grouping of 11 variables which were selected from the distinct cluster of English language respondents for type of information sought .....	136
Figure 3. 9. Dendrogram showing the grouping of 11 variables which were selected from the distinct cluster of Japanese language respondents for type of information sought .....	137
Figure 3. 10. Dendrogram showing the grouping of 11 variables which were selected from the distinct cluster of English and Japanese language respondents for type of information sought .....	137
Figure 3. 11. Dendrogram showing the grouping of 10 variables which were selected from the distinct cluster of English language respondents for Source of knowledge .....	138
Figure 3. 12. Dendrogram showing the grouping of 10 variables which were selected from the distinct cluster of Japanese language respondents for categories of Source of knowledge .....	139
Figure 4. 1. The distribution (percentage) of the total respondents scores for 30 predictive dog bite signals.....	173
Figure 5. 1. Two groups of English and Japanese language respondents and video assessment procedure .....	200
Figure 6. 1. The final model of cultural factors and people’s perception of HDAB....	225
Figure 6. 2. A wider framework for a management of HDAB .....	231

## **Chapter 1:**

### **A definition of human-directed aggressive behaviour in dogs, key elements of assessing it and cultural Factors**

This chapter reviews the nature of aggressive behaviour and define the concepts of “aggression” and “aggressive behaviour.” It also focus on key indicators of human –directed aggressive behaviour of dogs (HDAB) as these have a profound influence on how problems are inferred and treated. Cultural factors that may influence people’s perception of HDAB will also be identified and reviewed.

#### **1.1. Introduction**

Human-directed aggressive behaviour is considered to be the most serious behaviour problem of dogs worldwide (Overall, 2001; Messam *et al.*, 2007; Gilchrist *et al.*, 2008; Hsu and Sun, 2010) as the dog is often euthanized or abandoned. This is the most common behaviour problem reported in behaviour clinics (Bamberger and Houpt, 2006; Casey *et al.*, 2013; Casey *et al.*, 2014). According to official statistics, hospital admissions for injuries caused by dogs were 8,014 in England and have risen by 76% over the past 10 years (HSCIC, 2015) It has still increased by 7.4% from 2017 to 2018 (NHS digital, 2018). In the USA, there are estimated approximately 4.5 million dog bites occurring each year, which indicates a dog bites for nearly 1 out of 5 people (CDC, 2018). Owners have apparently been confronted with higher rates of dog attack, and dog bites have become a topic of international interest: considering the risk to public health and implications for the prevention of dog bites (Chomel and Trotignon, 1992; Bhangana *et al.*, 1993; Thompson, 1997; Kumar, 1999; Ozanne-Smith *et al.*, 2001; Frangakis and Petridou, 2003; Horisberger *et al.*, 2004; Van Eeckhout and Wylock, 2005; Morgan and Palmer, 2007; Rosado *et al.*, 2009, Furnell and Finlay, 2015; Westgarth *et al.*, 2018).

One fundamental problem which may arise related to HDAB is the lack of consensus as to how people perceive aggressive behaviour. It is argued that when people use the terms “aggression” or “aggressive behaviour”, they may be used with varying meanings by different individuals (Mills *et al.*, 2007; Mills *et al.*, 2013; Mills *et al.*, 2015; Orritt, 2016). For example, some people describe a dog’s rough and tumble play as “play aggression”, introducing the concept of “aggression” (which often has negative connotations) into the context of play with an affiliate (a very positive context). Other people describe the behaviour of a dog that bites his owner as a result of frustration at having an object that he likes being taken away

from him by his owner as “dominance aggression” because they believe that the dog is challenging for social status, in this situation aggression is clearly a hazardous situation in which there is a risk of harm, unlike the former situation. People may be prejudiced to interpret growling or baring teeth as aggression, and thus a negative situation, regardless of the individual circumstance (Mills *et al.*, 2013; Mills *et al.*, 2014; Mills *et al.*, 2015). Such value laden perception of aggressive behaviour may result in people’s inappropriate management of aggressive behaviour in dogs and escalation of the situation. From an affective neuroscience point of view (Panksepp, 1998; Craig, 2003), it is argued that the behaviour can arise from certain stimuli which link to a range of motivational-emotional systems (Mills *et al.*, 2013; Mills, 2017). Therefore, to understand HDAB, we must identify the role of specific motivational-emotional systems in given circumstances.

Another aspect which may affect an individual’s perception are cultural differences. Perception is coloured by many sociocultural elements (Markus and Kitayama, 1991; McDonald *et al.*, 2011). People may label a dog’s behaviour as their own evaluation because the definition of aggression usually has subjective elements and personal characteristics (Ackerman, 1996; Roche, 2007; Hwang, Wang, and Pomplun, 2011). Therefore, if the terminology has not been set or there is no agreed framework to describe HDAB, cultural influences may have a strong effect on people’s perception and response towards HDAB.

In previous studies, it was argued that for the effective management for prevention of HDAB, it is important to assess risk factors, which include the animal’s intrinsic characteristics and environmental factors, e.g.

- breed characteristics (Gershman, 1994; Overall and Love, 2001; Svartberg, 2006; Rosado *et al.*, 2007; Duffy *et al.*, 2008),
- gender differences (Cameron, 1997; Goodloe and Borchelt, 1998; Takeuchi *et al.*, 2001, Duffy *et al.*, 2008),
- neuter/spay status (Gershman *et al.*, 1994; Messam *et al.*, 2008),
- behavioural characteristics (Netto and Planta, 1997; Duffy *et al.*, 2008; van der Borg *et al.*, 2010; Arata *et al.*, 2014)
- social environment such as early experience and socialization (Seksel, 1999; Appleby *et al.*, 2002; McMillan *et al.*, 2013; Pirrone *et al.*, 2016),
- obedience training methods (Hiby *et al.* 2004; Blackwell *et al.*, 2008; Herron *et al.*, 2009; Arhant *et al.*, 2010) including physical punishment (Butcher *et al.*, 2008; Meester *et al.*, 2011),
- owner’s experience with dogs (Jagoe & Serpell, 1996; Perez-Guisado and Munoz-Serrano, 2009),

- owner’s management and living environment (Takeuchi *et al.*, 2001; O’Sullivan *et al.*, 2008; Hsu and Sun, 2010),
- dog’s learning experience (O’Sullivan *et al.*, 2008) and risk factors for HDAB in different contexts (Casey *et al.*, 2014), with owner’s characteristics (Jagoe and Serpell, 1996; Podberscek and Serpell, 1997a, 1997b; Perez-Guisado and Munoz-Serrano 2009; Matos *et al.*, 2015).

However, there is little research which appears to identify people’s evaluation of aggressive behaviour in dogs:

e.g. 1. Perception of female owners who were bitten by dogs and implications for the prevention of dog bites (Westgarth and Watkins, 2015),

2. Perceptions and rationalization of aggressive behaviour in dogs by people from a variety of experiential and educational backgrounds (Orritt *et al.*, 2015).

There is no research that appears to focus on the concept of “aggression” vs “aggressive behaviour” in dogs and cultural factors which may influence perception of HDAB.

Therefore the aim of this research was to explore people’s perception of HDAB and what cultural factors influence HDAB, in order to try to establish a consistent HDAB assessment method that enables us to minimise a risk of aggressive behaviour in dogs and communicate appropriately with them.

In this chapter, the following four aspects are reviewed:

- Definition of aggression and aggressive behaviour
- Three elements – context, motivation and emotion of aggressive behaviour
- How HDAB is described in the scientific literature
- Cultural factors that may influence people’s perception of HDAB

## **1.2. Defining “aggression” and “aggressive behaviour”**

### 1.2.1. Concepts of aggression and aggressive behaviour

Van der Dennen (1980) stated, “In spite of the continuous effort shown by many scholars in different fields dedicated to the scientific study of aggression, there is still considerable disagreement about its precise meaning and cause, with no singular or even preferred definition”. Nearly 40 years later, as he suggested, aggression is still largely viewed subjectively and is difficult to define; an important consideration is that potentially relevant behaviours may be labelled differently based on the labeller’s perception of aggression. For example, some people may perceive aggression in another whenever they are harmed or injured or

when they see someone else harmed or injured; others may label particular non-violent actions such as staring or verbal abuse as aggression (Van der Dennen, 1980). Zillmann (1979) argued that aggression was what people say is aggression. Thus, there is no agreed scientific definition of aggression, it is a *social construct*. Aggression is not entirely definable objectively, and there are no objective, definitive rules to follow because people tend to judge with their perceptions. It is important to recognise that people's perception is influenced by personal characteristics such as beliefs, personality, and knowledge (Ackerman, 1996; Roche, 2007; Hwang et al 2011), which may be based on an individual's culture (Markus and Kitayama, 1991; Matsumoto, 2006).

As concepts of aggression vary, a further problem arises: as illustrated already, the terms "aggression" and "aggressive behaviour" are often used confusingly and with inconsistent meaning and implication (Mills *et al.*, 2013; Mills *et al.*, 2015; Mills & Westgarth, 2017). People may describe dog aggression by identifying specific elements of behaviour such as biting, snapping, baring teeth, growling, snarling, lunging, and barking. However, when a dog nips a person, it may be caused by excited play without any intent to cause harm, unlike predation or a bite in a competitive context; it is then questionable what the common classification of these behaviours under one umbrella term like 'aggression' adds to our confusion and thinking on this subject. Aggression in this context is clearly not a functional behavioural unit. Aggression may be defined as a form of goal-directed behaviour (Berkowitz, 1988), i.e., an action with the goal to harm someone either physically or psychologically, such definition puts the emphasis on the goal of the behaviour as an output from the actor. However, this cannot be known for sure by an external observer, only inferred from the available evidence.

Because of these problems with the term "aggression" which arise from it being viewed from the reductionist perspective that dominates much of science, some authors have started to argue that there is a need to emphasise the role of observer perception in the interpretation and labelling of such social constructs, and so are encouraging the use of the alternative term "aggressive behaviour" as this more clearly refers to a perceived style of responding (Mills *et al.*, 2015; Mills & Westgarth, 2017), which may convey varying motivational-emotional information depending on circumstances (Mills *et al.*, 2013; Mills *et al.*, 2014; Mills *et al.*, 2015). The use of the term 'aggressive behaviour' may reduce the risk of misunderstanding and miscommunication. Mills and Westgarth, (2017) argues there are three key elements which define, in different ways, aggressive behaviour and these need to be differentiated, to produce a coherent overall definition of any incident:

1. Context of the behaviour: The situation in which the behaviour arises
2. Motivation: The function or goal of the behaviour

### 3. Emotion: The animal's personal relationship with key stimuli controlling the event

These elements may help us understand the nature of any apparent problem, but require a logical way for making any inferences, i.e., suggesting the motivational or emotional factors involved in the aggressive behaviour. In the next section, these three elements of aggressive behaviour were explored and how they can be differentiated.

## **1.3. Three elements of aggressive behaviour**

Within the field of veterinary behavioural medicine, there is no standard method for classifying aggressive dog behaviour. Although there are still many classification approaches and arguments (Haupt, 2006), it is frequently referred to within a mixed contextual, motivational and emotional framework (Heath, 2005; Mills *et al.*, 2013). These are described below:

### 1.3.1. Context

'Context' refers to the observable environmental circumstances or occurrences unrelated to motivation (Hull *et al.*, 1997; Johns, 2006) surrounding the aggressive behaviour. Context may be related to a 'stimulus' which exists in the environment external to the individual (Mowday and Sutton, 1993) and "setting" which create circumstances that precede the incident (Johns, 2006). Consider, for example, an owner is approaching her dog when the dog is eating a bone in his crate. In this case, the owner coming close to the dog may be the trigger for an aggressive incident. The dog is in his crate in this setting. Both trigger and setting affect the risk of the behaviour in slightly different ways. The trigger is directly linked to the occurrence of the behaviour whereas the setting affects the general risk in the presence of any of a variety of potential triggers. Context relates to both of the above and its consideration will help to form part of the evidence for further inference for what is going on (Mills and Westgarth, 2017). Therefore it is essential to pay attention to what the trigger for the behaviour is and whether there is any specific circumstance preceding the incident.

There are behavioural cases involving aggressive behaviour by dogs which accidentally occur in the circumstances; e.g. in the context of play or greeting people, in these instances the dog had no motivation to cause harm. The apparently aggressive behaviour is not specifically linked to the context because it does not link with a specific underlying mechanism (Mills *et al.*, 2014; Mills *et al.*, 2015; Mills and Westgarth, 2017).

### 1.3.2. Motivation

The concept of 'Motivation' is defined in two ways: 1. as the biological function of the behaviour: an internal state or condition, such as a need, desire or want that arouses and directs goal-oriented behaviour (Kleinginna and Kleinginna, 1981; Franken, 2006), e.g., hunger or thirst, and 2. a component of individual differences in intensity and direction of the behaviour (Hull, 1943; Humphreys and Revelle, 1984). For example, if an animal feels very hungry, he is stimulated to eat, the feeling of hunger is diminished and thus the motivation to eat reduced.

The source of motivation is categorised as either intrinsic (internal) or extrinsic (external) (Ryan and Deci, 2000). The previous studies suggest that intrinsic sources and corresponding theories can be further categorised as either body / physical, mind / mental, i.e., cognitive, affective, conative or transpersonal or spiritual (Deci and Ryan, 1985; Ryan and Deci, 2000). On the other hand, extrinsic theories suggest that it can be defined in terms of incentive, that is, the presence of an external stimulus such as sight, smell, taste, touch, or sound that triggers a prediction of a future reduction of the need of the animal (Spence, 1956; Decker, 2010). The combination of any internal 'drive' and any incentive determines how strongly the subject is attracted in that direction (motivated) (Wise, 2004). For example, if the animal is hungry and food is presented, the sight or smell is the incentive that makes the animal feel more hungry. In the case of dog aggression, if a dog is hungry, the presence of a rabbit may make the dog chase it with the goal of killing and eating it, the term 'predatory aggression' may be used in the motivational sense to define the 'form of aggression'.

Another motivational variable is 'reinforcement' (Hull, 1943; Wise, 2004). Reinforcement was defined early on as a mechanism for strengthening the relationship between conditioned and unconditioned stimuli (Pavlov, 1928) or for 'stamping in' the associations between stimuli and responses (Thorndike, 1898). It is intimately linked to motivated behaviour, since the consequences of motivated action feed back onto future expectations and behaviour in similar circumstances in future.

It is considered that Motivation cannot be measured directly. However, it is suggested that it can be assessed using the ABC (antecedent, behaviour, consequence) approach of behaviour analysts (Friedman, 2001, 2009). This approach is likely to focus analysis on defining objectively:

- The events and conditions that occur before the target behaviour (antecedents), e.g. the presence of a visitor, which helps to infer the trigger for the response.
- The form of the behaviour (what the behaviour looks like), e.g., the dog starts barking or growling and is moving directly towards the front door.

- The consequences of the action (how the behaviour changes in response to change around it). This may help to identify what reinforces or inhibits the behaviour, e.g., when the person goes away, the dog stops barking. Therefore it may allow the motivation to be inferred on the basis of observable evidence.

Any external trigger which could be in the visual auditory, olfactory or haptic (touch) sensory channel can be a trigger stimulus (Ryan and Deci, 2000). However this evidence does not clarify the reason why a specific dog may display the behaviour and another may not in the same circumstance. This would be related to the dog's emotional state. Motivation can therefore be usefully distinguished from emotion.

Analysis of the motivation underpinning different aggressive incidents may help to distinguish their associated risk, which is an essential consideration before any intervention is made. Five examples of aggressive incidents are as follows (Intervention resource (Microsoft power point) used for a video assessment described in Chapter 5);

- Non-harmful incidents of normal behaviour, e.g., play growls  
It is considered that the risk may be low because it is likely to be motivated as a part of the normal enticement to play sequence and it is not to be motivated by any form of threat.
- Low-risk accidents e.g. incidental injury such as a bite when feeding by hand  
It may be a low risk situation as the dog is not motivated to harm the person.
- Risky styles of behaviour, e.g., over-exuberant play or a greeting resulting in injury  
The dog is jumping up at the child, but it is likely to be medium to low risk as it can be easily managed by reshaping the style of behaviour because the dog is not motivated to harm the person.
- Calculated risks taken by the animal, e.g., when the animal is trying to control or defend a resource (dog protects food while he is eating). In this context, the animal is monitoring and assessing the situation and its aggressive motivation is based on making a decision to respond by balance of the risks associated with either flight or fighting (Mills and Zulch, 2010). The risk here is much higher without specific behaviour modification aimed at altering the animal's perception of the circumstances.
- Predatory behaviour e.g. chasing and killing an animal, e.g., pet rabbit  
The motivation here implies the destruction of another and needs to be distinguished between playful chasing and any form of competing over a resource. It is therefore a very high risk behaviour and the motivation needs to be completely changed in the circumstances.



### 1.3.3. Emotion

‘Emotion’ is referred to as an individual response and is thought to be a result of the interaction between perception of environmental stimuli, neural and/or hormonal responses to these perceptions and the potential subjective cognitive labelling of these feelings (Kleinginna and Kleinginna, 1981). Therefore emotion is different from motivation in that there is not necessarily a goal orientation affiliated with it (Huitt, 2003a; 2003b).

When a reward or stimulus situation occurs unexpectedly, an emotional state is activated in the dog that helps it to make a judgment. This state has two functions. The first is to promote learning from experience (Schachter, 1962; Watson *et al.*, 1999; Carver, 2001; Barrett, 2006; Barrett *et al.*, 2007) which can help the animal cope with the preceding situation better the next time it occurs. For instance, if a dog is bitten by a larger or more muscular dog, he may tend to avoid interactions with dogs of the same breeds or size when he comes across them in the future. The second is to directly motivate current action since a reinforcing stimulus (Rolls, 1986; Gray, 1982) often causes a specific behaviour to be performed. For instance, if an owner often cuddles the dog and the dog finds this comforting, he emotionally may seek cuddles and become frustrated if the owner withholds them. Therefore learning from experience and how the animal feels in the given situation may activate emotional states.

Emotion includes two different aspects of emotional process (Mills *et al.*, 2013; Mills and Westgarth, 2017); ‘emotional quality (type of response)’ and ‘emotional intensity (level of arousal)’. In the former, emotional process to certain stimuli depends on individual quality of experience or relationship with the person or object. For example, a dog may be emotionally predisposed to ‘feel’ (whether or not this is conscious) differently towards different people. The dog is delighted when he meets people whom he knows, but he is afraid when he sees an unfamiliar person. In the latter example, the specific emotional process aroused and its intensity depends on individual experience and expectation. For example, a dog may feel the same type of feeling towards two people, but the feeling towards one of the people may be more intense, due to different expectations. The dog is excited to see the person who he knows, but he may be more excited to see the person who often gives him a tasty treat.

From a social interaction point of view, the quality of relationship between an individual and a dog has an important influence on a dog’s emotional quality and emotional quality has an important role on the behaviours prioritised to certain stimuli (Mills *et al.*, 2013; Mills and Westgarth, 2017).

Emotion, like motivation, cannot be measured directly but can be inferred (Mills *et al.*, 2014).

However, it is argued that an emotion is stimulated by the synchronization of different physiological and cognitive components. They respond in particular ways to a given stimuli that relates to something important for that person or animal (Scherer, 1987; 2001). The components of an emotional episode are the respective states of the four lines of evidence (Scherer, 2005):

- Cognitive (appraisal), the personal assessment of the type of event that is triggering a response. It is related closely to context and also particular triggers.
- Neurophysiologic (bodily symptoms), the level of physiological and behavioural excitement associated with the appraised event.
- Motivational (action tendencies), action to achieve the goal after the animal made a decision such as fight, flight and freeze - the higher level strategy behind the range of behaviours shown in response to the event.
- Motor expression (signs of communication), facial expressions, body postures, vocal and other forms of communication issued in response to the event. It is related to arousal, so sometimes signs of arousal can be read as communicative signals, e.g., pupil dilation, but it is categorised in signs of arousal as a physiological excitement.

These relate to different subsystems and functional processes in the organism (Scherer, 2005) and all subsystems underlying emotional components function independently and emotion may consist of the coordination and synchronization of all of the systems during an emotional episode, driven by appraisal, although many theorists regard emotion and cognition as independent but interacting systems (Scherer, 2005). Therefore, given the component process nature of the phenomenon, assessment of individual component changes may provide a systematic structure for a comprehensive measure of an emotion.

In recent studies of non-human emotion, affective states of mammals were accepted in general. Some researchers revealed the affective system could operate primary (basic) emotions, e.g., happiness, fear and sadness (Ekman, 1992; Panksepp, 1998). Some researchers suggested the existence of secondary emotions by owners in describing their dogs, e.g., jealousy, pride, shame and guilt in animals (Morris *et al.*, 2008, Martins *et al.*, 2016).

Such studies have been contributing to peoples' wider observation and understanding of animal behaviour. There has been more debate over the extent which dogs express tertiary affect such as "guilty look" (Horowitz, 2009; Hecht *et al.*, 2012), which defines "dogs not only look guilty, but that this indicates they feel guilty or realize their misdeed if they have done something wrong, inappropriate, warned against, or otherwise a violation of an established code of behaviour". The studies found that dog's recognition of misdeed was not associated behaviours of guilt, although the majority of dog owners who perceived dogs have the same

emotions that we humans do (Horowitz, 2009; Hecht *et al*, 2012). It indicates that people may also perceive HDAB in the same way as a human emotion.

Panksepp (2005) suggested from a neuroscience point of view, that all vertebrates have core emotional feelings in the brain: primary process affective consciousness (an intrinsic function of the brain) similar to humans, which may reflect the neuro dynamics of brain systems such as the limbic emotional action system. It means that when the brain system for one of the core emotions is stimulated, the same behaviour occurs, e.g., when the fear system of an animal is stimulated, the animal goes into a fight or flight response; when the anger system of an animal is stimulated, the animal growls or bites. Panksepp describes seven affective systems relating to motor action that is intrinsically emotional that he labels SEEKING (action directed towards acquiring desirable objects), FEAR, RAGE (frustration), LUST (reproductive oriented responses), CARE, PANIC/GRIEF (responses associated with the loss of safety), PLAY (social rough and tumble type action) (Panksepp, 1998).

Mills *et al* (2014) have developed the ideas of Panksepp further from a clinical behaviour perspective and focused attention on the stimuli controlling these and other responses. They suggest that the appraisal of an event may be categorised as either attractive or aversive and the response is related to its anticipated (prediction) or actual occurrence (presence) or termination (disappearance) of the stimulus. This refines the assessment made by behaviour analysts (described in the previous section), which tends to focus only on what is present, so that a similar process can contribute to the assessment of emotion as well as motivation. The given event which evokes an emotional response is referred to as an emotional competent stimulus (ECS), which can be linked to the affective systems described by Panksepp (1998). However, it is argued that two other important class of stimuli need to be included as well as core emotion systems: leading to the proposal of nine categories of emotionally competent stimuli and associated emotional responses as follows:

- Desirables: resources the animal wants at a given time lead to seeking out opportunities to have them, for example objects to play with or consume (SEEKING).
- Frustrations: barriers to things which the animal wants but cannot access or are less than expected or reduce the animal's autonomy lead to increased focused effort aimed at achieving the goal (RAGE).
- Threats: things that might harm the animal lead to avoidance of interaction. (FEAR).
- Hurts: things causing actual bodily damage lead the animal to withdraw and protect itself. It is an actual harm response and needs to be distinguished from the fear response of a potential harm (PAIN).

- Affiliates (people with whom a general affectionate social bond is shared): individuals within the animal's social group that provide assistance and share certain types of activity, such as rough and tumble play (PLAY).
- Attachment figures and objects: those that provide safety and protection lead to a strong dependence upon them at times of uncertainty and insecurity, and distress when they are not present (PANIC).
- Dependents: those that are perceived as being dependent on an individual, e.g., offspring (young animals) may invoke a range of caring behaviour directed towards them (CARE).
- Potential sexual partners: those with whom there may be breeding opportunities lead to the expression of courtship and reproductive activity (LUST).
- Undesirables: those that are thought to be a net cost to the benefits of the current social group may elicit responses associated with their expulsion and exclusion (HATE).

When a given response very predictably works efficiently without the need to attend to ongoing cues, it can become habitual (i.e. non-emotional). In this case, the response might be associated with increased arousal and this appears emotional, but it should be very consistent from one context to another unlike a true emotional response (Mills *et al.*, 2015).

It may be that more than one of the categories of ECS is present at a given time and the animal will operate primarily in accordance with the one that is most salient, although both may be active. One circumstance may also rapidly lead into another, e.g., frustration may combine with fear when the dog is eating his food while another dog is nearby. In this case, the dog may feel both threatened by the other dog who may take his food and frustrated by him being close to him. Mills (Mills *et al.*, 2013) has developed a process based on Scherer's four emotional components (Scherer, 2005), which can be used to test hypotheses about emotional state in accordance with the scientific method (Falsification) in order to infer emotion in the field. Evidence is taken from four lines (Scherer, 2005): context which reflects the individual's appraisal of the event, arousal, general behavioural motivational tendencies and signs of communication such as facial expressions, body postures, vocalisation etc.

When we learn more about animal emotions, it will be possible to better understand the expression of the emotions and motivations of the animals

It is essential to consider each element: motivation, emotion and context to infer the behaviour and none of these elements alone is sufficient for an emotional 'diagnosis'. This represents a considerable advance on previous approaches described in the veterinary literature, which forms the basis of the next section.

## **1.4. The diagnosis of human-directed aggressive dog behaviour in the veterinary behaviour literature – an update**

In veterinary literature, it has been recognised for some time that there are problems with the accurate diagnosis of apparently aggressive incidents. For example, Reisner (2003) suggested that aggressive dog behaviour, described as growling, baring teeth, snarling, snapping, biting and barking, which includes the threat of harm to people or objects, is considered to be poorly classified. Diagnostic categories were suggested to include aggression related to fear, food, play, possession, territory, predation, maternity, or pain. Aggression may also be redirected or directed toward the owner (Beaver, 1983; Reisner, 2003; Luescher and Reisner, 2008). These descriptions and classifications of aggressive behaviour in dogs seem to appear to mix terms referring to context (food related, owner directed), motivation (predation) and emotion (fear) (Mills *et al.*, 2014). In order to identify whether or not the descriptions and classifications of aggressive behaviour in dogs have improved, a review of the literature published since Reisner's seminal publication (2003) was undertaken as a prelude to the thesis.

A literature review was undertaken from January 13 to 20 in 2012 using electric journals, e.g., *Animal Behaviour*, *Applied Animal Behaviour in the University of Lincoln* and 'Google Scholar', as people have been using Internet sites enormously in recent years (Statista, 2018) using the search terms human directed aggression and aggressive behaviour in dogs such as bites, growls and barks. The initial search cycle yielded 295 references up to 2012 since Reisner's original description of the problem in 2003. The abstracts were examined to select relevant studies that were consistent with the differential diagnoses and classifications of HDAB or HDAB present in dog behavioural problems or aggressive behaviour. These papers were then examined in detail for their content in relation to how HDAB was described and classified. The results are therefore presented within a narrative context. Seven papers (Hsu and Serpell, 2003; Luescher and Reisner, 2008; Haug, 2008; Houpt, 2006; Kottferova *et al.*, 2008; Barbieri *et al.*, 2007; Horwitz, 2012) were selected for full analysis as a result, and their descriptions of HDAB were assessed.

### **1.4.1. Description of "aggression" and "aggressive behaviour"**

'Aggressive behaviour' may be used in place of the term 'aggression', therefore, usage of either of the terms was identified in the papers selected and how these states were identified. Horwitz (2012) stated, 'Aggression is usually defined as threat or harmful action directed to one or more individuals'... 'In dogs, staring, snarling (lifting the lip), growling, snapping,

and biting are all indicators of aggression'. Such descriptions may cause confusion, as to whether the behaviours always indicate intention to harm. This description emerged often in the literature, thus the term 'aggression' was likely to be used only in consideration of the dog's motivated action. Another description which may cause confusion (Horwitz, 2012) was the assertion that 'The type of aggression such as offensive or defensive can be used to classify aggressive behaviour', without indicating how this might be determined.

The descriptions of other authors (Hsu and Serpell, 2003; Luescher and Reisner, 2008; Haug, 2008; Houpt, 2006; Kottferova *et al.*, 2008; Barbieri *et al.*, 2007) implied that any aggressive behaviour could be classified as a certain type of aggression by function and the evidence presented for this is elaborated on in the next section. In conclusion, it seems the terms 'aggression' and 'aggressive behaviour' are used imprecisely and interchangeably in the recent literature.

#### 1.4.2. Classifications of HDAB

There were several approaches to classifying aggressive behaviour of dogs, but these broadly reflected either its victim/target or cause. The victim/targets included family members, strangers, other dogs, and other animals (Hsu and Serpell, 2003; Houpt, 2006). The causes included dominance aggression, fear, possessive, protective, territorial, parental, play, predatory, redirected, pain induced, pathophysiological and learned (Barbieri *et al.*, 2007; Luescher and Reisner, 2008; Haug, 2008; Houpt, 2006; Kottferova *et al.*, 2008; Horwitz, 2012). As such, they often tried to synthesise motivation (e.g. protective) with emotion (e.g. fear), but do not provide a comprehensive framework for either.

All of the papers addressed that diagnostic categories of aggressive behaviour depend on the animal's reason and need to consider its motivation. Although some papers (Barbieri *et al.*, 2007; Luescher and Reosner, 2008; Kottferova *et al.*, 2008; Horwitz, 2012) indicated that the contexts, such as the surrounding circumstances and internal or external stimuli caused the dog to behave aggressively, these then described the classification of HDAB in connection with its motivation, without reference to emotion. One paper (Luescher's and Reisner, 2008) about 'Canine Aggression towards familiar people' referred to 'Conflict behaviour' and classified 'Conflict-related aggression' by use of a description of motivational and emotional state: 'dogs who display conflict behaviours resulting from stress or frustration may soon afterward show imminent aggression'. i.e. 'Frustration results from the dog's being motivated to perform a behaviour but thwarted from performing it'. The paper stated that it is important to be aware of and observe carefully conflict behaviours, indicating an emphasis on underlying motivation for diagnosis, even when considering emotional state. None of the

papers emphasised the importance of assessing the dog's emotional state first; they only empathized assessing the motivational state for diagnosing the category of aggression.

#### 1.4.3. The importance of body signals

In order to diagnose aggressive behaviour in dogs, an appropriate understanding of communicative signals such as body posture and facial expressions is very important.

It is essential for us to acknowledge that dogs have different preferences for how humans interact with them (Mills *et al.*, 2015), for example, a style of approaching which involves staring, bending over the dog to greet him or to pat him, may be threatening gestures for dogs. In these situations, they may display growling or lunging behaviour but this may only be indicating their anxiety in these situations, and not a pre-emptive attack. It is suggested that when dogs feel anxiety or unease, they usually display subtle signs as a first option i.e. looking away, moving away, body stillness and tension, tucking tail, flattening ears, pulling lips back, yawning and lip licking to avoid overtly aggressive behaviour or to keep a distance from an object (Mills and Zulch, 2010; Mills *et al.*, 2015) because an immediate aggressive response may result in physical harm to themselves.

In the literature reviewed, Horwitz (2012) described: 'A good understanding of aggressive body postures and facial expressions is necessary to identify types of aggression' and she also stated that it would aid with assessing emotional state, as 'the positions of the ears, tail, and hair are also used to indicate what the animal will do and the underlying emotional state, such as fear, anxiety, etc.'. Luescher and Reisner (2008) described body language associated with anxiety as 'yawning, lip-or muzzle-licking, looking away or towards the ceiling, visually scanning the surroundings, squinting the eyes, licking objects, scratching self, vocalization, and many others', and conflict aggression as involving 'averting the gaze when a threatening or dominant dog approaches, cowering and tucking the tail, rolling over and possibly urinating, growling and display of submissive grin and whining'. Some of these signs are considered to be overlapped, such as the avoidance of gaze (Mills and Zulch, 2010). Dogs' emotional states seem to be complex and there may be more than one emotion involved in a given situation and it may lead to a dog displaying aggressive behaviour in an effort to control the situation (Mills *et al.*, 2015) e.g., a dog is frustrated by having a toy taken away by his owner, but he is also fearful of his owner because he has been punished by him in the past in that situation. In this case we would expect to see signs of more than one emotional state, and it is clear from the literature, that differentiation at this level has not

been undertaken to any systematic degree. In order to identify what emotional states are implicated, further assessment of body signals in context is required so that different but co-occurring emotions can be distinguished (Scherer, 2005).

As described earlier, diagnosis requires consideration of both motivational and emotional states (Mills *et al.*, 2013; Mills *et al.*, 2014). This brief review of the literature highlighted the explained problem of diagnostic categorisation and suggested that little progress has been made in terms of both the frameworks used and the processes involved in diagnosis. In the next section, the important issue of cultural influence is considered, as in the human literature diagnostic categories used in psychiatry may be culturally dependent on aspects of attitude, belief, knowledge and expectation.

### **1.5. Cultural factors which may influence the perception of aggressive behaviour in dogs**

There are many definitions of culture. In a dictionary, ‘culture’ is defined as “the ideas, customs, and social behaviour of a particular people or society” which includes ‘the attitudes and behaviour characteristic of a particular social group’ (Oxford dictionary, 2018). In anthropology, Tylor’s referred culture (1873) as ‘that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society’ and it has been considered to be a fundamental definition in anthropologists. However, the characteristics of culture have described differently by different anthropologists (Kroeber and Kluckhohn 1952; Hofstede 1994; Matsumoto 1996; Spencer-Oatey, 2008). Clearly culture affects the way we make sense of the world around us and so it is reasonable to suggest that culture will affect the perception of constructs such as ‘aggressive behaviour’.

Perception is referred to ‘The neurophysiological processes, including memory, by which an organism becomes aware of and interprets external stimuli’ (Oxford dictionary, 2018) and it is what allows us to make sense of the world through the experience of our senses and collection of data (Roche, 2007). What factors influence perception has been discussed at length from different aspects in different fields of study (Hofstede 1994; Matsumoto 1996; Spencer-Oatey, 2008). Five senses: vision, hearing, touch, taste and smell affect the way stimuli are presented to an individual but perception describes how they are interpreted in a specific and personal way (Hwang *et al.*, 2011): people’s attitudes, beliefs, and expectations may shape their perception (Fazio *et al.*, 1986; Roche, 2007), social influences such as socio-economic status, gender difference may affect our perception and it is the basis for the formation of memories and life experiences (Geary *et al.*, 1992; Kimura, 2004). Internal stimuli



such as emotional and motivational states may also influence people's perceptual hypotheses (Allport, 1955). Markus and Kitayama (1991) argue that one's perception may be characterized by many sociocultural elements including our construal of self as independent or interdependent. They conclude that people in different cultures have different perceptions of self and others when two cultures meet, and this can lead to misunderstanding of aggressive behaviour in dogs. However, this does not seem to have been considered in relation to the evaluation of aggressive behaviour in dogs.

If one's perception may be attributed to individual attitudes, belief, individual's understanding and experience, which may be related to cultural differences, these factors may influence people's perception of aggressive behaviour in dogs. It is therefore important to appreciate the nature and potential role of each of these constituent elements on what is seen as a behaviour problem in dogs and how it may differ between cultures.

#### 1.5.1. Attitudes

The most well-known theory in social psychology regarding attitude is presumed to combine three components (Katz and Stotland, 1959; Berscheid and Walster, 1978; Jones, 1984; Coleman *et al.*, 2016), which influence each other (Rosenberg and Hoveland, 1960):

- affective (feeling, emotion) e.g. I am scared of snakes
- behavioural (action of an individual), e.g., I will scream when I see a snake
- cognitive (belief, knowledge, expectations, thoughts) components, e.g., I believe that snakes bite people

Although some theorists argue that attitudes are comprised of only one or two components (Fazio and Olson, 2007; Olson and Maio, 2003; Hogg and Vaughan, 2009), if attitudes shape one's perception, it is worth considering how each of the components influences perception towards HDAB and how this might be related to culture, is a central consideration of this thesis.

It is considered that people's attitudes towards aggression or violence may vary among cultures. The justification of particular aggressive acts which can be based on norms, values, and beliefs vary by culture as well as by specific circumstances (Lansford and Skinner, 2011). Fujihara *et al.* (1999) investigated attitudes among Japanese, American, and Spanish students toward three kinds of human aggression, which seemed to separate into: physical aggression (killing, torture, and hitting); direct verbal aggression (shouting and rage); and indirect verbal aggression (being sarcastic and hindering), although a recent study (Ramirez, 2015) has argued that this model of three types of aggressive actions could not be shown in

the German samples as German had two types; physical aggression and non-physical aggression. In the work of Fujihara et al., (1999), there was no significant difference between two age groups: university students and senior citizens, but men showed higher justification for physically aggressive acts in any situation and also indirect verbal aggression in non-defensive circumstances. Culturally, they found that Japanese students indicated a lower justification for indirect verbal aggression but a higher justification for direct verbal aggression than American and Spanish students. Moreover, physical aggression in defensive situations was justified more by American students than by Japanese and Spanish students. These findings suggest that there seems to be a cultural difference in accepted moral standards for physical aggression and verbal aggression. Ramirez (2007) has investigated the degree of moral approval of aggressive acts in different circumstances, using a questionnaire administered to university students in six countries: Finland, Poland, Spain, Japan, Iran, and India. The study found that passive aggression (hindering) was largely accepted in European countries and Iran but less so in India and Japan. Just as the circumstances in which the aggressive behaviour may be justified differ, so do acceptable methods of punishment. Europeans had a very low level of justification less than Japanese. Iranians justified punishment the most. Japanese justified aggressive acts in consequences of emotional agitation less often than did Iranians, Indians and Spanish. Aggressive acts that were a result of communication difficulty were the least justified among Asians and Spanish. Ramirez argues from the result of the justification of punishment, Muslim countries may regard punishment as a fair way of treating people who have injured others. The results indicate that Asian people may consider using aggressive behaviour as punishment more often than Europeans. On the other hand, Europeans (Mediterranean) may express their emotions more aggressively than Japanese.

Attitudes toward different kinds of aggression can vary between hostile or emotional aggression (based on an impulsive feeling) and instrumental aggression (aimed at achieving non-aggressive goals) (Bandura, 1973; Buss, 1962; Feshbach, 1964). Ramirez *et al.*, (2011) investigated further the personal degree of approval of different aggressive acts in various instrumental and emotional-motivated situations, by students from Hong Kong and Spain.

They found that there were some minor cultural differences on levels of justification of aggressive acts in different situations; Physical aggression (e.g., killing, torture) were less accepted than passive aggression (e.g., hindering, being ironic) in both populations. Aggressive acts more socially justified (such as those conducted in protection of self or other) were clearly more accepted than others with no such justification (e.g., as an expression of emotions, as a result of communication difficulties). Instrumental-motivated aggression (self-defence, defence of other people, and defence of property) was higher justified than emotionally based aggression (lack of communication, punishment and anger). However there were

some differences in the level of acceptance according to the sex of the participants. Females had a tendency towards a higher acceptance of emotional aggression. Although both sexes justified aggression to a higher degree for instrumentally motivated situations than for emotional ones, males showed a higher acceptance than females for instrumental situations and a lower one than females for emotional ones. At a cultural level, Spanish students accepted aggression less than Hong Kong students in emotional situations, especially for the cases of punishment and lack of communication.

The previous studies indicate that people's justification of aggression in different countries is consistent with a universal moral code or based on common sense to a degree. Mild acts such as verbal aggression are more acceptable than stronger ones involving physical aggression. However, there are differences to the degree of justification for milder aggressive acts in different situations depending on sex, age and different countries.

Such findings may aid in understanding the differences between how people perceive and respond to aggressive dog behaviour in different countries, because it is hypothesized here that people may tend to view or react to aggression from a dog towards themselves in a very similar way to how they would view or react to aggression from another person towards themselves. People in Japan may perceive any "rough behaviour" as aggressive behaviour, while Western people may not. In the case of a dog, Japanese people may be more likely to perceive simply "lunging behaviour" of dogs as aggressive, while Western people may not. How people perceive and react to aggression may depend on their justification of aggressive acts by people. Therefore identification of people's attitudes towards aggression (in terms of their thought, feeling and reaction to aggressive behaviour) might be useful to understand people's attitude towards HDAB. However, to date, this has not been examined by any scientific research. Therefore, in this research, it is considered that people's attitudes towards aggression is the one of the cultural factors to examine the relationship with people's attitude towards HDAB.

Ramirez (2007) also argued that some cultural attitudes might be associated with differences in the way the self is construed in society. Markus and Kitayama (1991) pointed out that culture and mind are mutually constitutive, that there are cross cultural differences in the construal of the self, of others, and of the interdependence between the self and others in society and that they have a set of specific consequences for cognition, emotion and motivation. In psychology, this aspect of cultural characteristics: individualism and collectivism has been of great interest to research (Triandis, 1988). Triandis (1995) suggested the defining attributes of individualism and collectivism as 'Among collectivists, social behaviour is best

predicted from norms and perceived duties and obligations (Bontempo & Rivero, 1992; Miller, 1994). Among individualists, social behaviour is best predicted from attitudes and other such internal processes as well as contracts made by the individual'. The prototype of a Western society is independence, and the individual view is respected (Power *et al.*, 2010; Cheung-Bluden, 2011). As the common view of the previous studies, people in Western countries may have an independent self-construal, promoting the idea that individuals should be independent of other people (Hofstede, 1980; Triandis, 1995; Matsumoto, 1999; Gelfand *et al.*, 2001). On the other hand, societies such as Japan have an interdependent self-construal in that they are socially oriented, emphasised being in a group, promoting each other's goals and being indirect (Hofstede, 1980; Triandis, 1995; Matsumoto, 1999; Gelfand *et al.*, 2001). Within an individualist society, aggression may be perceived as an acceptable means to win competitions and to achieve self-reliance. By contrast, it may be seen as more disruptive by individuals from a collectivistic society because social harmony is highly appreciated in collectivistic cultures (Triandis, 1989; Li *et al.*, 2010). Thus, Asians may show a lower justification of aggression than western people to avoid conflict and competition and they may be more repressed themselves compared to Western people (Gudykunst and San Antonio, 1993). It may thus influence their perception or attitudes towards HDAB and how it needs to be managed may vary with culture. If a Japanese owners' dog displays aggressive behaviour toward a person in public, they may consider the person or other people first rather than doing something for their dogs even if the person threatens the dog, because they may socially feel pressured and do not wish to trouble other people due to a collectivist cultural background. Therefore they may be more sensitive about the aggressive behaviour of dogs towards other people than Western owners, who may focus more on their own rights. In this case, it might be predicted that Japanese owner's might avoid other people, not take their dogs for walks or be less tolerant of any aggressive behaviour in their dogs. On the other hand, Western owners may prioritize their dogs because of a cultural background based on individualism. They may be more likely to look at HDAB from a dog's point of view or perceive or react towards HDAB because of their individual beliefs. A recent study with Chinese adolescents (Li *et al.*, 2010) found that collectivism was negatively related to their use of overt and relational aggression, whereas individualism was positively related to adolescent aggression. The study argued that these relations depend on context and individual circumstances, e.g., conflict level and social status insecurity. The results also caution against making assumptions based on nationality rather than cultural philosophy. Accordingly, this thesis seeks to consider variations in cultural values and beliefs in relation to aggression and how they might impact on the perception of HDAB.

### 1.5.2. Belief, knowledge and expectations concerning dogs

‘Belief’ is referred to in various ways in different fields of study. However, belief is typically conceptualized as an estimate of subjective probability, or alternatively, of the certainty that a proposition is true (Eagly and Chaiken, 1998; Fishbein and Ajzen, 1975; Wyer and Albarracín, 2005; Schwitzgebel, 2006). Psychologists suggest that the following four issues contribute to the formation of beliefs (Wyer and Albarracín, 2005):

- childhood experiences with people (Benjamin *et al.*, 1997; Gelman, 2008)
- the influence of a charismatic leader (Hoffer, 2002)
- repetition of information by media (Kilbourne *et al.*, 2000)
- personal experience including trauma (Rothchild 2000)

These factors may influence cultural attitudes as well as those of an individual. Belief is considered to be related to knowledge (Rosenberg and Hoveland, 1960). ‘Belief’ concerns the likelihood that one’s knowledge about a proposition is correct. The knowledge has implications for past or future states of affairs. New information one receives about a proposition is true as a view of subjective probability estimates or judgment (Schwarz and Bohner, 2001; Wyer and Albarracín, 2005). One of the influential cultural factors on people’s beliefs and knowledge is considered to be the media as it can change people in wider social views, at the same time it may also confine or shape people’s behaviour (Philo, 2008; Happer and Philo, 2013). Identifying what information about dogs’ behaviour is delivered in the media, and which sources or information people use most often is therefore crucial.

Media, e.g., television, advertisements, radio, newspapers, and websites, are assumed to have the most direct influence on beliefs and attitudes (Ball-Rockeach, 1976; Happer and Philo, 2013). Media also reinforces positive and negative beliefs about the images of dogs and dog breeds (McBride, 2006; Bartels, 1993, Nordhielm, 2002). Television naturally emphasizes visual images with news reports of accidents. For example, TV news /advertisements, newspapers that often feature strong breeds such as Pit-Bull types, Staffordshire Bull Terriers, Rottweilers, and Mastiffs, which are often owned by gangs in the UK (BBC News, 2009, The Telegraph, 2012, Campbell, 2016), have reinforced negative beliefs, i.e. aggressive image, about them and their breeds. It also creates a negative image for these dogs. Labradors and Golden Retrievers are the breeds most commonly used as Assistance or Guide Dogs for people who are disabled. Their activities may often be seen in a positive light for their contributions, which create familiarity and influence people’s favourable opinions of Labradors and Golden Retrievers or dogs in general. This is used in marketing, as

many forms of advertising can be used to create a feeling of familiarity with the product (Bornstein, 1989; Bornstein and D'Agostino, 1992).

On the other hand, small breeds such as Chihuahuas or Pomeranians which are often featured on Japanese dog food packaging or in fashion advertisements, are usually perceived as 'cute'. Jack Russell Terriers are often shown on TV playing with a ball or performing tricks; these activities may make the breed appear to be 'active', 'lively' but possibly also 'difficult to control'.

In TV programmes or advertisements using dogs, people's feeling of liking or disliking, pleasant or unpleasant, favourable or unfavourable or feeling familiarity may influence their perception and also reactions towards HDAB by a given dog or in general. If people have had a pleasant experience with a dog or a certain breed through the media, they may have a positive perception towards a dog or that breed and react positively to dogs or another dog of the same breed; but if people have an unpleasant experience through the media with a dog or a particular breed, they may have a negative perception towards a dog or that breed and react negatively and cautiously towards dogs or another dog of that breed. These feelings may induce people's prejudice against the dog or a limitation of understanding of the dog's behaviour. It is hypothesised that images from the media may have a huge impact on public perception and influence people's beliefs of dogs or certain breeds (Walsh *et al.*, 2007; Fratkin and Baker, 2013; Gazzano *et al.*, 2013). It may also influence people's perception of HDAB. How media delivers information may vary from country to country. Therefore it is important to investigate both what is delivered and how it is delivered.

The perception of people toward aggressive dog behaviour is presumed to be affected by the quality of their knowledge (Rosenberg and Hoveland, 1960; Philo, 2008; Happer and Philo, 2013), therefore, it is important to determine whether people are obtaining appropriate information from the sources they use. Kellert and Berry's (1980) study addressed some aspects of the relationship between knowledge of animals' and people's attitudes towards them. According to the authors, less knowledgeable individuals/groups tended to be young or elderly, female and urban or known to show negative or indifferent affective responses to animals. It may be partly dependent upon an individual's cultural background, which can be influenced by the widespread media people use most often and the popularity of topics in the country. Serpell (2004) argued that increases in knowledge and familiarity of these issues in the media would promote more positive affective perceptions, which may help overcome attitudes of indifference or dislike.

People acquire their knowledge through a variety of sources such as books, magazines, newspapers, TV, friends, breeders, pet shops, the Internet and social media. People's experiences with dogs may affect their knowledge as well. In Japan, the number of people who use

the Internet is increasing every year, and approximately 103.89 million people (Statista, 2018) (80.9% of the total population) used it in 2017 (Ministry of International affairs and communications, 2018), which is an increase of nearly 10 % since 2006. In the UK, usage has also increased 57.3 million people (Statista, 2018), corresponding to 90% of the total population, compared with 89% used it in 2017 (Office for National Statistics, 2018). Recently, new categories of Internet sites, social media sites such as Twitter and Facebook have become very popular all over the world. Twitter, for example, claims 326 million active users all over the world (Statista, 2018), over a ten time increase since 2010: with approximately 25.4 million active users, Japan ranks second place in usage. The UK is in third place, with 17.1 million users (Statista, 2018). As for Facebook, there are 2.27 billion monthly active users all over the world which has more than doubled in number since 2008 (Statista, 2018). The UK is in eleventh place with 39 million users, while Japan is ranked much lower, but is among the fastest growing Facebook user countries with 29.58 million users (Statista, 2018). A recent insurance-company driven study (anicom Japan, 2012) revealed that among 2,882 Japanese owners of companion animals who were facing dog-behaviour problems, 69.9% percent sought answers via the Internet; 64.0% percent went to an animal clinic; 47.7% percent consulted magazines; 33.0% percent talked to friends; and 19.1% percent of owners went to a pet shop. Thus, the Internet seems to be a very influential medium for people to gather information in Japan. Today, people can also use mobile phones and tablet PCs to obtain Internet information as well as a variety of satellite channels (Statista, 2018) and the number of users have increased every year (Statista, 2018). Clearly, new and readily accessible information always exists. It means that people can also easily select and rely on inappropriate information. For example, many books and Internet sites might recommend inappropriate methods for the treatment of dog behavioural problems rather than describing why it occurred; the stimuli for the behaviour or causes in certain contexts. How HDAB is described in popular media, and what information is selected in the media, are potentially key factors affecting people's understanding of HDAB in the different countries.

In Japan, over 75.5% of dog owners keep small breeds (JPFA, 2018), they may tend to treat their dogs in an anthropomorphic way which makes them less likely to get information on breed characteristics, training or behavioural traits than information relating to fashion items such as clothes, accessories, handmade bags, and buggies (Japan Today, 2008; A DOG'S LIFE, JAPAN, 2014). On the other hand, many dog owners who keep more medium or large breeds (The Kennel Club, 2018; Evening Standard, 2018) in Western countries (although small breeds have been increasing in UK) are likely to get information based on a daily care such as dog training, food / treats, veterinary information (PET GAZETTE, 2018)

rather than information relating to fashion items. This cultural factor may also be related to the owners' knowledge or level of understanding of aggressive behaviour.

'Expectation' is referred to as "A strong belief that something will happen or be the case." (Oxford Dictionary, 2018). Beliefs about the future are often equated with 'expectations' (Olson *et al.*, 1996) and depend on knowledge or frame of reference. Expectations can be useful because they allow the perceiver to focus their attention on particular aspects of the incoming sensory stimulation and help them to know how to deal with the selected data: how to classify it, understand it and name it (Bruner and Minturn, 1955; Vernon, 1955). If we expect animals to behave in certain ways in certain situations, these expectations can influence how we perceive animals and their roles. If a given behaviour represents an unmet expectation in one individual but a met expectation in another, the same may be perceived very differently. These expectations will vary with both individual and cultural norms. Based on a survey of the Australian public by King *et al.* (2009) 'the ideal dog' was described as medium-sized and short haired. Survey participants also considered an ideal dog to be neutered or spayed, safe with children, fully housetrained, friendly, obedient, and healthy. In addition, they indicated that an ideal dog would come when called, not escape from their property, enjoy being petted, and be capable of showing affection toward them. For women, desirable behavioural characteristics in dogs included non-aggressiveness, sociability, good health, calmness and compliance. Men, on the other hand, preferred dogs that were energetic, faithful, and protective. With such varying owner expectations for a dog, the authors suggested that in order to reduce the incidence of aggression problems, educating pet owners about the various characteristics of different dogs and the need for realistic expectations is essential. However, the authors fail to appreciate that their work is also rooted within a single country and the potential influence cultural factors might have on the perceived ideal.

Bergler (1986) and other authors (Messent, 1983; Hart, 1987; Peretti, 1990; Zasloff and Kidd, 1994; Miller and Lago, 1990, McNicholas & Collins, 2000; Wells, 2004) describe factors influencing owner satisfaction, as well as the advantages and disadvantages of dog ownership. Advantages, according to Bergler (1986) include: social stimulation, companionship, relaxation, leisure activity, preventative health care, friendship/comradeship, protection, emotional enrichment and security, positive challenge and responsibility, regular, structured routine, learning opportunity for children, understanding and sympathy from the dog, rewarding sense of achievement, an aid to social contacts, and prestige (attractiveness of the dog perceived to enhance the owner's status). Different owners will likely seek different



qualities in their relationship and so the function of the dog in the home may affect their perception of HDAB; for example such behaviour from a dog which is there primarily to provide protection, will be viewed very differently to one that is hoped will provide friendship. A survey of dog owners by Pet Food Manufacturers Association (PMFA) in the UK (2012) noted that the most common expectation of owners towards dogs was 'Companionship'. On the other hand, a survey of dog ownership for Japanese owners found that the most common expectation of owners towards dogs was 'Relaxation' or 'Comfort' (Ishida, 2007; Nippon Com, 2016, Okagawa, 2017).

Disadvantages of dog ownership identified by Bergler (1986) included: restricted freedom, financial cost, expenditure of time, lack of canine hygiene, problems with neighbours, family difficulties, e.g., moving house, divorcing, or expecting a new baby, possible risk to other people, and having to deal with dogs in the case of the owner's illness or death. Japanese dog owners have identified the same disadvantages (JPFA, 2018). Such disadvantages need to be investigated further because these factors may influence owners' attitudes towards their dogs: 'Problems with neighbours', for example, may include a problem of excessive dog barking (Miller *et al.*, 1996), and 'possible risk to other people' may include a problem of aggressive behaviour in dogs (Miller *et al.*, 1996; Salman *et al.*, 1998; Diesel *et al.*, 2007). The balance between advantages and disadvantages of dog ownership will clearly feed into people's perception and attitudes towards dogs. If an owner's requirements and expectations of dog behaviour do not match their own dog's behaviour, it is possible that this may cause a wider negative perception of dogs and HDAB.

The role of a dog is also presumed to be reflected in the owner's expectation and influence people's attitudes to HDAB. Dogs have become members of the family particularly when they moved indoor to live with us (Serpell and Paul, 2011; Fogle, 2015). Between 86 % and 97 % of pet owners in America (American Animal Hospital Association, 1996 ; Associated Press, 2009 ; Barker & Barker, 1988 ; Harris Interactive, 2007 ; Pew Research Centre, 2006), 78% in UK (MORE THAN, 2018) and 87% in Japan (Sugita, 2005) consider their pets to be members of the family. However, pets may have a specific role for their owners. Some previous studies suggested (Veever, 1985; Hirschman, 1995) that pets perform three role functions for people: projection, sociability and surrogacy. It is revealed that 75% of pet owners surveyed considered their pets like children, and nearly one-third of participants felt closer to the family dog than to any other member of the family (American Animal Hospital Association, 1996; Barker & Barker, 1988). For example, 69 % of American pet owners allow their pets to sleep in bed with them (Harris Interactive, 2007). In Japan, 39% of pet owners surveyed considered their pets like children, 19% as friend, 17% brother or sister (Sugita, 2005). Although many owners in both Western countries and Japan consider their

pet as a child, the meaning of the role of dog might be different between Western countries and Japan. As described earlier, the most common expectation of owners towards dogs was 'Companionship' in the UK and 'Relaxation' or 'Comfort' was in Japan. Such different expectations may indicate the cultural different meaning of the role of dog. Owners in the UK may respect their dog's views and value communication or interaction with their dogs; Japanese owners, on the other hand, may value their life and what their dogs can do for them because they require their dogs for things that they want. This might have implications for their perception of HDAB outside of national cultural norms and may influence the quality of interaction between dogs and owners.

How people spend time with their dogs may also influence people's perception of HDAB. In the UK, According to a study of Esure Pet Insurance (2011), the average person walks with their dog for eight hours and 54 min a week (approximately an hour per day), covering 36 miles. A separate study found that dog owners gain more exercise from walking their dogs than an average gym goer does (The Telegraph, 2009). In Japan, many dog owners seem to prefer to go to a dog café that offers dog cakes, cookies and cooked food (A DOG'S LIFE, JAPAN, 2014). The amount of time spent by the owner with their dog has been associated with the risk of behaviour problems (Kobelt *et al.*, 2003) and time shared with dogs may prevent aggressive behaviour (Bennett *et al.*, 2007). Therefore, how the owners spend time or interact with their dogs is very important especially in relation to a dog's needs and desires (Haug, 2008). For example, some owners may treat dogs as if they were their babies, they cuddle them when out for walk (the dog does not actually walk and exercise) or expect the dog to just sit beside them without having had enough exercise or stimulation. Such anthropomorphic attitude or child surrogacy may ignore a dog's physical and psychological needs and these owners may not recognize the importance of observing how their dog is behaving and of giving appropriate feedback. Szantho *et al.* (2017) found that owners who had anthropomorphic attitude towards their dogs perceive them to be more emotionally reactive than owners who had non-anthropomorphic attitudes. However, this does not imply an understanding of cognitive and affective behaviour of dogs; instead, it may simply be an indication of the expectation that owners have of their dogs. Dogs need exercise to burn off energy, stimulate their minds, stay healthy and to form good relationships with humans (Russell, 1936; Hart, 1995; Loveridge, 1998; Haug, 2008). Lack of psychological and physiological exercise may cause frustration and agitation or result in the dog being easily aroused by triggering stimuli (Haug, 2008). Lack of walks may result in dogs showing unsocial behaviour towards other people (Roll and Unshelm, 1997). These dog's emotional states may cause HDAB and such owner's attitude differences may influence their perception of HDAB.

For the three role functions for people: projection (Veever, 1985), sociability and surrogacy, dogs help people project an image of themselves that they wish others to see. Recently, large breeds including Rottweilers, German Shepherds, and Bull Terriers appear to have been used increasingly as weapons in street crimes and fighting and as a status symbol by street gangs (BBC News, 2009). Therefore, perhaps a person in the UK who wants to project an image of ‘toughness’ would choose to own a breed that is historically associated with fighting, such as a Staffordshire Bull Terrier. In Japan, women who wish to appear fashionable may own a popular breed like a Toy Poodle, or unusual crossbreeds like those often shown in popular fashion magazines. The same women may use ‘designer’ carrier bags to transport their dogs and dress their dogs up in very expensive clothes and accessories, e.g., collars, leads (Japan Today, 2008) as if such owners wish to show off their dogs (prestige). In addition, owners who have no children may treat a dog like a child. For example, dogs have their own room, a wardrobe full of designer clothes and smart ‘doggie bags’ and buggies or pushchairs to transport them in (The Guardian, 2012). For those who may have less human social contact, dogs can create and enhance social connections through activities such as walking, training, or agility exercises. Thus, regardless of the general type of role function, HDAB may be perceived very differently by owners according to the reason they own a dog.

### 1.5.3. Background experience of owners with dogs

In order to assess and respond to aggressive behaviour in dogs appropriately, it may be crucial to have experience of handling dogs, as well as skill and knowledge of training methods including a good knowledge of dog communication signals which display individual emotions. Many first-time owners may lack experience handling and communicating effectively with dogs (Peachy, 1993; Jagoe and Serpell, 1996), and many people who lack education in dog communication cannot recognise or understand dog signals appropriately (Bradshaw and Nott, 1995). For example, people often believe that a wagging tail means that the dog is happy (Mills *et al.*, 2015), even if its body is tense (signalling discomfort). Dogs express their signals according to both context and capacity (Bradshaw and Nott, 1995; Shepherd, 2002; Mills and Zulch, 2010; Mills *et al.*, 2015). Bradshaw and Nott (1995) claim that dog signals are inherited from wolves in general. However, domestication may affect dogs’ perceptual biases in communication (dogs being potentially more visual than wolves, Albuquerque *et al.*, 2016), and elements of a wolf’s “body language” may have been lost through anatomical changes as a result of pedomorphosis (Goodwin *et al.*, 1997). As a result, it might be that certain features of visual communication play little part in successful interactions for

some breeds that have incompatible signalling capacities (Bradshaw and Nott, 1995, Shepherd, 2002, McBride, 2006). People who lack handling experience may not acknowledge this, and may therefore misinterpret their dog's signals.

It is important to carefully observe and assess a dog's signals in specific circumstances. Inaccurate assessment may cause humans to respond inconsistently (Cullinan, 2004) which may threaten the dog or cause conflict (Mills and Zulch, 2010; Mills *et al.*, 2015). Many owners take their dogs to obedience training classes in Western countries such as UK and USA, where they may extend their experience of dogs with others. However, it seems that far fewer owners take their dogs to classes in Asia, e.g., Japan. Experience of dog training classes has been found to increase obedience and decrease behavioural problems in dogs (Clark and Boyer, 1993; Jagoe and Serpell, 1996; Bennett and Rohlf, 2007). The use of "reward-based methods" was found to be correlated with fewer behavioural problems, less stress (Deldalle and Gaunet, 2014) and better obedience and learning as reported by dog owners (Hiby *et al.*, 2004; Blackwell *et al.*, 2008; Rooney and Cowan, 2011; Súilleabháin, 2015). On the other hand, the use of 'punishment-based methods' was found to be associated with behaviour problems such as fearfulness (Schider and Van der Borg, 2004; Blackwell and Casey, 2008), aggression to dogs (Haverbeke *et al.*, 2008; Arhant *et al.*, 2010; Casey *et al.*, 2013), people (Arhant *et al.*, 2010), lower obedience (Hiby *et al.*, 2004) and stress (Schalke *et al.*, 2007). There thus seems to be good evidence to suggest that personal experience with dogs and perhaps the associated dog culture, may influence people's perception of and reaction to HDAB, although this does not seem to have been explored explicitly.

## **1.6. Concluding comments**

In conclusion, HDAB occurs as a result of the interaction between people and dogs, but how this is perceived may vary as a result of many personal and subjective factors, which appear to have been largely overlooked in the scientific literature to date. Any attempt to classify HDAB must recognise how people perceive and assess dog behaviour. People's perception of dog behaviour is probably culture dependent and therefore probably influenced by factors such as:

- Their attitudes towards aggression and HDAB specifically
- Individualistic versus collectivist tendencies
- Types of information sought and sources of knowledge and used to understand dogs and HDAB
- The role and value of dogs in their lives

- Handling / general experience of dogs and training methods

## 1.7. Overall aims and objectives

Considering the above, the primary aims of this thesis are to examine:

- i. How the popular media present HDAB in different countries:

Media is an important factor which may influence people's perception towards HDAB (Ball-Rockeach, 1976; Happer and Philo, 2013), but the content of this has generally not been examined from a comparative cultural perspective to see to what extent it might reflect or drive cultural attitudes towards this problem. In addition, this examination of popular literature may help identify gaps in popular understanding of HDAB in different countries. A survey was used to review how popular books, magazines and Internet sites describe the classification of aggressive behaviour of dogs in the UK and Japan, as representatives of a Western and an Asian country. The popular books, magazines and Internet sites selected in each country were used to examine whether they focused specifically on context, motivation and/or emotion in each country. The findings were also expected to help establishing cultural biases in relation to HDAB by dogs.

- ii. Whether people's perception of HDAB differ in different countries:

An Internet survey was used in order to identify potential cultural and consistent subjective differences in the perception of HDAB in a population of dog owners, including dog trainers and non-dog owners who were English or Japanese speakers. Three groups of predictive factor were of particular interest

- 'General culture': nationality, country of residence, ethnic groups, gender, age, living environment, type of home, household structure, current work status and number of under / over 12 year olds living in the household
- 'Dog management culture': attitudes toward aggression and HDAB, collectivism or individualism, type of information sought, source of knowledge, the value or role of the dog, and handling experience and training methods for dogs
- 'Perception / reaction towards HDAB': perception towards communicative signals of aggression in dogs, perception of causes of HDAB, perception of motivation and emotion of dogs, what people consider to be important factors for the prevention of HDAB, and people's preferred methods for modification of HDAB.

- iii. Whether a systematic framework for the assessment of HDAB can be established, which appears to be effective regardless of culture:

A fundamental problem, appears to be is a lack of objective attention to dog behaviour by both the public and scientists, in order to systematically infer motivation and emotion in different circumstances. These issues are the focus of this thesis. A resource for standardizing the assessment of aggressive behaviour by dogs was developed and assessed using video assessment in a randomized control study. The outcome variables of interest related to the recognition of motivational and emotional elements of the behaviour by dog owners including dog trainers and behavioural experts among English and Japanese speakers.

## **Chapter 2:**

### **Representation of HDAB in popular literature: books, magazines and the Internet in the UK and Japan**

This chapter examines, using qualitative research methods, how popular books, magazines and Internet sites represent HDAB in the UK and Japan. One of these countries represents a Western culture and the other an Asian one and would be expected to show cultural differences.

#### **2.1. Introduction**

In the previous chapter, an initial critical review of the clinical behaviour literature highlighted a number of inconsistencies and a wider review of the literature highlighted the potential importance of a range of cultural factors. Therefore, in the current chapter, we examine the issue of cultural influence on the perception of aggressive behaviour by exploring the subject in English and Japanese popular literature. Dog issues are regularly represented in the media. The role of the media and the content provided are often adjusted to cater to the interests of the target audience (Gurevitch, *et al.*, 1982; Takahashi, 2001; Assumann, 2003; Happer and Philo, 2013) and their way of delivering information also affect public attitudes (Happer and Philo, 2013; Orritt and Harper 2015), hence the way dog behaviour is represented in the popular media in the United Kingdom and Japan may be influenced by cultural factors, but also reinforce them.

Previous cross-cultural studies indicate differences in the style of communication in advertisements and websites (Hall, 1976; de Mooij and Hofstede, 2011), which may influence other media. The studies suggested, in Western countries, that information is drawn from the explicit content presented in communications by interacting with various messages (e.g., searching, editing, and manipulating provided contents). They are thus categorized as low-context cultures (Hall, 1976; Gudykunst *et al.*, 1996; de Mooij and Hofstede, 2011). In Eastern cultures, such as the Japanese, Chinese or Korea, communication is categorized as high-context cultures (Hall, 1976; Gudykunst *et al.*, 1996; de Mooij and Hofstede, 2011). This is expressed by indirect verbal expression which is not in words and includes the situation, behaviour, and using tones as integral parts of the communicated message (Hall, 1976, 2000; Cho & Cheon, 2005; Würtz, 2005; Hermeking, 2005; Singh & Hu, 2005; Richardson & Smith, 2007) and using more signs / symbols or illustrations than words (Mueller, 1987;

Hall, 1976; Gudykunst *et al.*, 1996; de Mooij and Hofstede, 2011). Content analysis of websites found that the US showed the highest level of low-context cultures, e.g., such as direct, explicit content, whereas Japan showed the highest level of high-context cultures such as indirect, implicit and ambiguous (Hofstede, 1980, 1991, 1993, Singh & Hu, 2005; Würtz, 2006). Ambiguous messages within high-context cultures in media may lead the public to misunderstand or be confused about information.

Another style of communication; the level of power-distance was investigated in countries (de Mooij, 1998; Cho and Cheon, 2005; Singh and Hu, 2005; Richardson and Smith, 2007). Hofstede (1984) defined it as "the extent to which less powerful members of institutions and organizations accept that power is distributed unequally" was investigated in countries. The studies addressed that collectivism in high power-distance cultures (Eastern countries) emphasize social status, referent power, authority and legitimacy (Hofstede, 1984), while individuals in low power-distance cultures (Western countries) emphasize equal rights and less hierarchy. Hofstede's studies addressed the level of power distance as related to the values for the 6 dimensions between countries (Hofstede insights, 2019). He addressed that collectivism in high power-distance cultures (Eastern countries) emphasize social status, referent power, authority and legitimacy (Hofstede, 1984), while individuals in low power-distance cultures (Western countries) emphasize equal rights and less hierarchy. Hofstede's values for the 6 dimensions between countries (Hofstede insights, 2019) also showed Japan had a higher score of power distance and a collectivistic society than the UK.

In Japan, the media are aware that people are very much influenced by it as a culture (Krauss, 1996). People seem to follow fashion and celebrities and therefore media can easily manipulate people with information and set fashion standards (Gurevitch, *et al.*, 1982, Aaker *et al.*, 2001; Assumann, 2003, Galbraith and Jason, 2012). The attitude may be related to high power-distance culture as people easily follow well-known people's opinions or statements and behaviour. For example TV presenters, actor/actress, singer or whoever well-known have adopted many dogs from shelters and had an opportunity to appear on TV programmes to train the dogs. Since then such well-known people have frequently been on TV or radio programmes or Internet sites instructing dog training or advising for behavioural problems. Their way of dog training and behavioural advice has affected the public. Moreover, high power-distance culture is considered to be affected by collectivism (Cho and Cheon, 2005; Singh and Hu, 2005) as people prioritize their relationship with others. Some previous studies determined such characteristics of countries: Japanese magazine advertisements use more graphics and illustrations, more status appeals, fewer information appeals, and show more respect towards elders than American counterpart advertisements (Mueller, 1987). Content analysis of websites (Singh & Hu, 2005; Würtz, 2006) also found that high



power-distance cultures depicted higher level of power distance oriented features, e.g., status appeal, respect authority figures, images in groups than low power-distance cultures, e.g., non-reference power, images in individuals (Hofstede, 1980, 1991, 1993). These may be also related to high-context culture and also high power-distance culture which indicates the importance of stressing status symbols in Japan, i.e., showing respect towards well-known or elderly people or authority figures, while individuals respect their equality in US (Hong *et al.*, 1987). Such cultural differences: high or low power-distance may extend further to other media culture and may affect the quality of information available and the level of understanding of people in different countries.

Books seem to be a popular media. In the UK online shop (Amazon UK) in August 2017, there were 183,233 dog books available. Of which, 1,375 were imported books from US about dog training and behaviour. There has been an increase of about 50% in total books about dog training and behaviour available since 2012. The figure seems to be influenced by the emergence of Kindles and e-books. Magazines are also a very popular medium for the British public and while there has been readership growth, they are very competitive due to the variety available (Journalism.Co.UK, 2017). There were 7 regular dog magazines in 2013 (Google. co. search, 2017). However, the dog magazine companies have also created digital information because the use of the Internet (including social media) has been increasing dramatically in recent years. By contrast there were only 18,330 books dealing with dogs, including 497 books about dog training and behaviour, in the equivalent Japanese online book shop (Amazon Japan) in August 2017, which was nonetheless an increase of about 30% in total and 25% for dog training and behaviour since Amazon Japan 2012. These numbers include many imported books which are translated to Japanese. There were 10 dog magazines available in the year 2014 (Fujisan co.jp, 2014): 2 monthly, 6 bimonthly, 2 seasonal. The number of magazines has decreased from 17 dog magazines in 2004 (Fujisan co.jp, 2014), perhaps because the economy has been in recession. However, magazines which introduce special features (such as ‘when a puppy is acquired’, ‘houses for living with dogs’) have been increasing in association with the increased numbers of dog owners. Therefore books, magazines and Internet are likely to still be an important source for gathering information in both the UK and Japan about what the public in these countries are learning about HDAB.

One previous study reviewed content and references to basic learning theory and human communication cues in popular dog training books (Browne *et al.*, 2017). The study identified inconsistencies in the depth of information provided as follows:

- terminology: such as correction or punishment
- inconsistencies in the explanation of learning theory

- conflicting training methods to modify aggressive behaviour ,e.g., some authors advised use of positive reinforcement, but other authors advised positive punishment techniques.

A few studies have investigated the representation of dog aggressive behaviour (i.e., dog bites) in the media (Podberscek, 1994; Oxley and Tibbot, 2012; Ghirlanda *et al.*, 2014; Orritt and Harper, 2015), but largely in British newspapers (Podberscek, 1994; Oxley and Tibbot, 2012). Podberscek (1994) concluded that media reports have influenced people’s perception towards certain breeds of dog leading to public losing acceptance of the breed. Oxley and Tibbot (2012) identified that there were no articles describing the primal causal factor or behaviour of the dog or victim before the attack in British newspapers, indicating that these were not likely of value in the media or to the public. No study has considered the representation of motivation and emotion in HDAB, in relation to the popular media. Given the findings of previous studies, the representation of HDAB in popular books, magazines and Internet can be expected differ in Western and Asian countries.

The survey presented in this chapter examines how popular literature: books, magazines and Internet sites describe the classification of aggressive behaviour in dogs in the UK and Japan, in order to consider if there is indeed evidence of important cultural differences. It focuses specifically on whether there are differences in emphasis on context, motivation and emotion related to these potential problems.

## **2.2. Methods**

### 2.2.1 Resources

#### Books

Ten books aimed at dog owners, including articles about HDAB and dog training or behaviour problem books, were chosen from ‘Popularity’ (since changed to ‘Avg customer review’) ‘sort by’ list of the Amazon website UK and Japan (Table 2.1; Appendix Tables 2.1 and 2.2) when searching for keywords ‘dog training’ and ‘dog behaviour problem’ in the book section. The ‘Popularity’ list from the site was changing hourly, the list used for the study was retrieved at the end of March 2012 and the books selected were the ones that appeared the most frequently in top 10 for this period during multiple searches at times of convenience. US author’s books were included for the survey of well-known authors’ books for both UK and Japanese owners.

### Magazines

Three monthly magazines which are popular and aimed at dog owners were chosen in the UK. Two monthly and two bimonthly popular magazines aimed at dog owners were chosen in Japan, as there are more magazines available in Japan and because Japanese magazines did not feature aggressive problems in articles very often. Thus more magazines were needed to select enough articles for comparison in the same period of time between the UK and Japan. Ten magazine issues which had features about HDAB were selected from 3 magazines in the UK and from 4 magazines in Japan (Table 2.1; Appendix Tables 2.3 - 2.6). They were selected over the same time period between October 2010 and December 2012.

### Internet sites

The most popular search engines – Google and Yahoo were used to search for the key words “Dog aggression” and “Dog bites” in the UK and Japan in March, 2012. The first 10 sites which included articles about HDAB were chosen since the public may pay more attention and click more readily on the results of the first page of the search engines (Table 2.1; Appendix Tables 2.7 and 2.8).

Table 2. 1. The number of media sources which were selected from UK and Japan on HDAB

Media	UK	Japan
Books	10	10
Magazine articles	10	10
Internet sites (Dog aggression)	10	10
(Dog bite)	10	10

### 2.2.2. Data acquisition

Each magazine article, book and Internet site was reviewed in three stages and classified regarding examination of HDAB as follows (Figure 2.1):

#### Survey stage 1

Each article was classified regarding HDAB in two types:

##### 1. No diagnostic inference given

The article did not define forms of aggression e.g. the article described the behaviour only using the word ‘aggression’ and did not clarify why it happened and what form was.

## 2. Terms used for aggression

The article included diagnostic qualification of the form of aggression, e.g. 'Possessive', 'Territorial', 'Food guarding'.

### Survey stage 2

The articles which included definitions for forms of aggression in stage 1 were then further analysed according to their content in terms of the focus of this research, i.e. the three elements needed to define behaviour discussed in the first chapter: motivation, emotion and context. Each description was evaluated based on the word or sentence used. For example, when an article used sentences that can be understood as goal-directed behaviour (e.g. protect vital resource, challenge to take a top rank), it was categorized as referring to motivation. Words such as fear and frustration were considered to refer to underlying emotion. However, the descriptions of HDAB in the articles were more complex than these examples indicate and categorization had to allow for mixed articles and when the evidence was unclear, the latter could not be classified or analysed further (Figure 2.1).

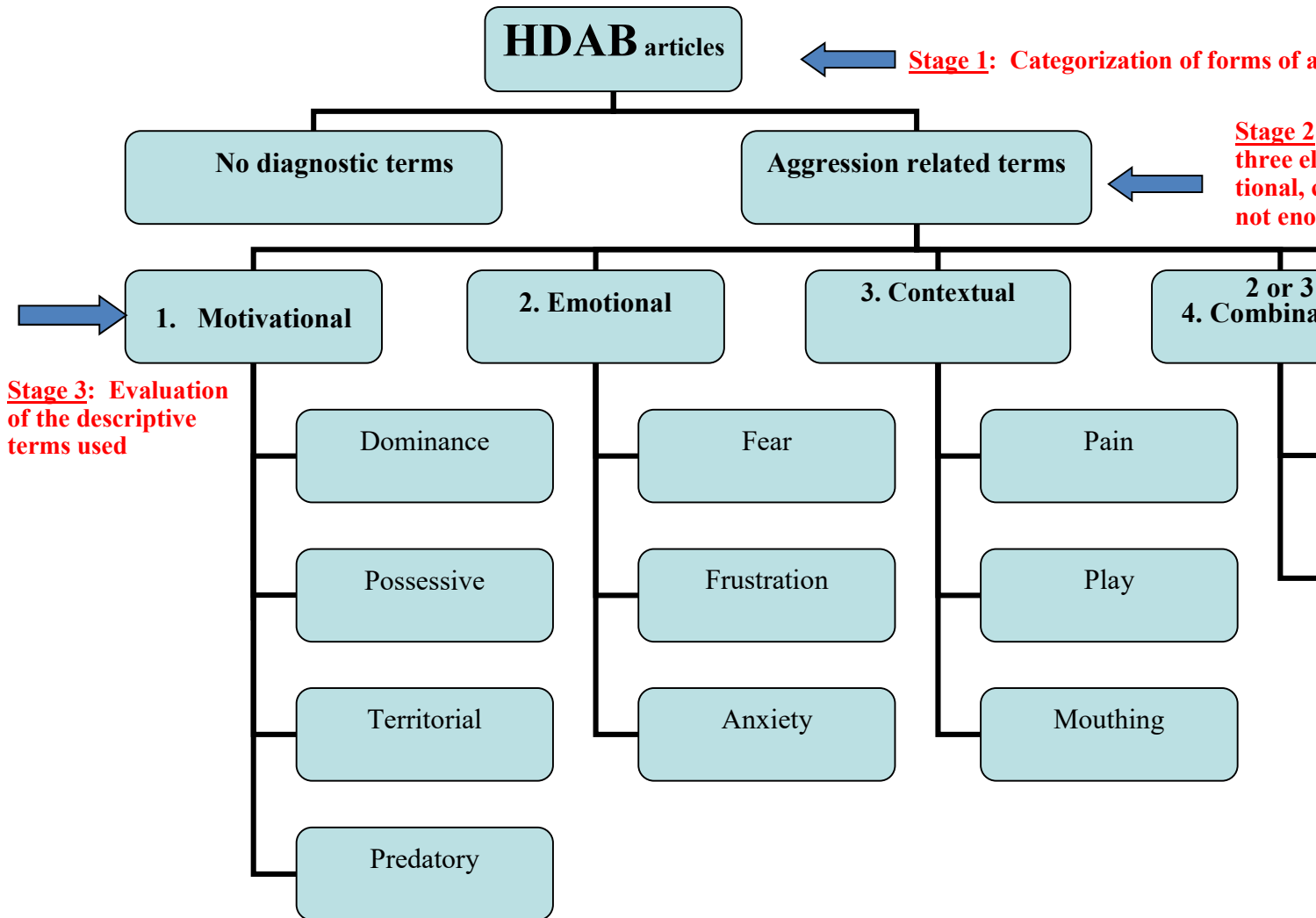
### Survey Stage 3

Where relevant specific information regarding the qualification of context, motivation and emotion in relation to HDAB was available it was extracted and summarized in tabular form. There were articles which related to HDAB in different contexts, e.g. special features, Q & A in several paragraphs in books, magazines and Internet sites. Thus each paragraph which described HDAB in an individual article was counted as a single piece of content which is called 'description'. The size of each paragraph of article varied from a few sentences to several pages.

The descriptive terms used to qualify HDAB in terms of motivation, emotion or context were investigated in relation to the following points:

1. What terms of descriptions (key words) were used for labelling aggression (which are often used in the science literature) e.g. possessive, fear and/ or frustration. Each term and element of aggression was counted as a single piece of data.
2. How they were described, i.e., How the interaction between motivational and emotional states was described (e.g. whether emphasis was on motivational over emotional state, or the reverse)

Figure 2. 1. Diagram of each stage in the survey



### 2.2.3. Data Analysis

The proportional representation of each category of HDAB in each book, magazine and Internet site was expressed as a percentage of ‘descriptions’ of aggressive behaviour in the articles. No quantitative analysis was undertaken, as this assessment was descriptive.

## 2.3. Results

Which articles were investigated in the current analysis from books, magazines and Internet sites can be found in Appendix Tables 2.1-2.9

### 2.3.1. Content analysis

#### 2.3.1.1. The number of pieces of content (‘descriptions’) relating to HDAB in articles

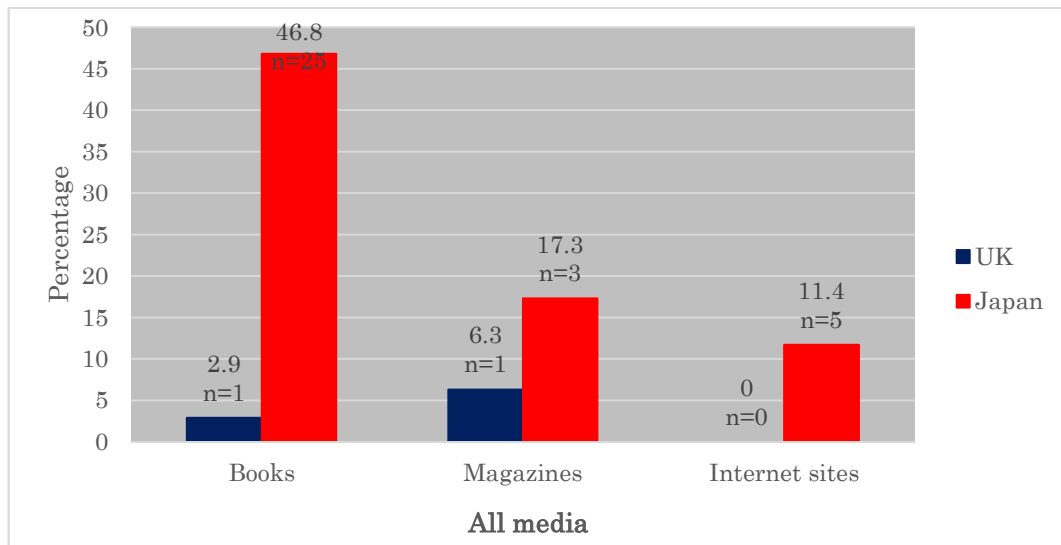
In the UK articles with descriptions of aggressive behaviour were researched in: 35 books, 16 magazines and 42 internet sites. In Japan descriptions of aggressive behaviour were researched in 47 books, 17 magazines and 44 internet sites.

The number of descriptions of HDAB depended on the type of article. For example, in the magazines, ‘Personal story (case study)’ or ‘Q & A’ would tend to have one description of a case of HDAB, but a ‘Special feature’ had several descriptions of cases of HDAB in the article. Internet sites had many descriptions of different terms of HDAB on each page because the sites introduced different diagnoses of dog aggression and an explanation about it. Each description of a case or term of aggression was counted as one piece of content.

#### 2.3.1.2. Stage 1: No diagnostic terms or terms used for aggression

The 10 UK books had 35 references to HDAB. In the 35 descriptions, 34 included terms qualifying the aggression (one example in Appendix Figure 2.1) and only one indicated no diagnostic qualification of aggression (Figure 2.2). The 10 Japanese books had 47 references to HDAB. In these 47 descriptions, less than half (22) unqualified the terms used (Figure 2.2). This result indicates a thematic difference in the lack of qualification of aggression between the UK books (2.9%) and Japanese books (46.8%).

Figure 2. 2. Percentage of items with 'No diagnostic terms' relating to aggressive behaviour in different UK and Japanese popular media was described



HDAB was described in magazine in different types of articles such as a 'Personal story', 'Q&A', 'Special feature about a certain term of HDAB' and 'Breed specific behaviour problem' in the UK.

In the 10 UK magazines there were 16 descriptions. Only one description of HDAB had no diagnostic clarification of the aggressive behaviour (Figure 2.2). This was a Q&A piece. The 10 Japanese magazines had 17 items with 3 descriptions lacking diagnostic terms. These results again indicate a lack of diagnostic clarification in Japanese media (Figure 2.2).

Most of the UK Internet sites reviewed were those of dog trainers or behaviourists or clinics (Appendix; Table, 2.7), on the other hand, in Japan, there were many pet product company sites, e.g. pet food, veterinary medicine, accessories (Appendix; Table, 2.8) which created a section on dog behaviour. Most UK sites which were searched for "Dog aggression" described forms of HDAB and how to handle the problem. However the websites selected using the term 'Dog bites' tended to describe annual numbers of dog bites or news of incidents. Therefore the websites which were searched by "Dog bite" were not included in further analyses in both countries. The UK had 42 and Japan had 44 references to HDAB in total the top 10 websites brought up by the search engine. Most internet sites in the UK stated many different forms of HDAB in each site. All of 42 descriptions of HDAB indicated a further qualifying term for the aggression and explained what each term of aggression indicated (Figure 2.2).

By contrast, in the Japanese internet sites, 5 out of 44 did not qualify the aggression further. The results are consistent with those of the other forms of media with no diagnostic qualification of descriptions in 11.4% of Japanese sites but 0% of UK sites (Figure 2.2).

#### 2.3.1.3. Stage 2: Reference to different elements of behaviour - motivation, emotion and context

The results are summarized in Table 2.2. The greatest numbers of terms of aggression were derived from internet sites in both UK (46.2%), and Japan (52.9%) compared to the other media examined, indicating this seems to be more a more extensive source.



Table 2. 2. Elements of aggression found in each media – (books, magazines, Internet sites) in UK and Japan. \*the percentage of each element in each media was calculated by the total numbers of each element.

M=Motivation E=Emotion C=Contextual CE= combinations of behavioural elements NE=Not enough evidence

	<b>M</b>		<b>E</b>		<b>C</b>		<b>CE</b>		<b>NE</b>		<b>Total</b>	
<b>UK</b>	N	%	N	%	N	%	N	%	N	%	N	%
Books	20	57.1%	5	14.2 %	2	5.7 %	8	22.8%	0	0%	<b>35</b>	<b>38%</b>
Magazines	2	13.3 %	9	60%	0	0%	1	0.7 %	3	20%	<b>15</b>	<b>16.3%</b>
Internet sites	13	31%	7	16.7 %	3	7.1 %	5	11.9 %	14	33.3 %	<b>42</b>	<b>45.7%</b>
<b>Total</b>	<b>35</b>	<b>38%</b>	<b>21</b>	<b>22.8%</b>	<b>5</b>	<b>5.4%</b>	<b>14</b>	<b>15.2%</b>	<b>17</b>	<b>18.5%</b>	<b>92</b>	
<b>Japan</b>	N	%	N	%	N	%	N	%	N	%	N	%
Books	4	17.4. %	6	26.1 %	4	17.4 %	7	34.8 %	1	4.4 %	<b>22</b>	<b>29.3%</b>
Magazines	2	14.3 %	3	15.4 %	3	21.4 %	0	0%	6	42.9 %	<b>14</b>	<b>18.7%</b>
Internet sites	20	51.3 %	6	15.4 %	1	2.6%	7	17.9 %	5	12.8 %	<b>39</b>	<b>52.9%</b>
<b>Total</b>	<b>26</b>	<b>34.7 %</b>	<b>15</b>	<b>20%</b>	<b>8</b>	<b>10.1 %</b>	<b>14</b>	<b>18.7%</b>	<b>12</b>	<b>16 %</b>	<b>75</b>	

Motivational elements showed the highest frequency of terms of aggression in both UK and Japanese media. UK showed it in books, while Japanese media showed it in the Internet sites. Emotional elements appeared to be referred to more frequently in UK media compared to the Japanese media. In the magazines, emotional elements showed the highest frequency, but less than motivational elements. UK showed more frequency for “not enough evidence” than Japanese media. Context elements appeared less in both media. Combined elements in Japanese media appeared slightly higher in total than UK media. However, it did not appear in magazines. UK media showed the highest frequency for books, while Japanese media showed it for both books and Internet sites. Motivational-emotional elements appeared more frequently than others in both UK and Japanese media (Table 2.3).

Table 2. 3. Frequency of 2 element combinations of behavioural elements in each form of media in the UK and Japan

	<b>Books</b>		<b>Magazines</b>		<b>Internet sites</b>		<b>N</b>
<b>UK</b>	Motivational - emotional	<b>7</b>	Emotional- contextual	<b>1</b>	Motivational-emo- tional	<b>5</b>	
	Emotional - contextual	<b>1</b>					
<b>Total</b>		<b>8</b>		<b>1</b>		<b>5</b>	<b>14</b>
<b>Ja- pan</b>	Motivational - emotional	<b>4</b>			Motivational-emo- tional	<b>7</b>	
	Emotional - contextual	<b>3</b>					
<b>Total</b>		<b>7</b>		<b>0</b>		<b>7</b>	<b>14</b>

#### 2.3.1.4. Stage 3: Specific terms used to qualify aggression

The behavioural elements which were unclassifiable in stage 2 were eliminated from further consideration and combinations of behavioural elements were evaluated separately.

There were 2 types of articles in the UK books:

- a) Articles that explain a form of aggression,
- b) Articles describing a case study of aggression

By contrast, Japanese books tended to use case studies to elaborate on aggression and the articles were very visual with many photos, with the causes or terms of aggression described only briefly and an emphasis on how to use handling to solve the problems.

There were a total of 27 singular terms used to qualify aggression in the UK books (Table 2.4). The most frequent specific motivational reference was to ‘Dominance’ (n=6), with ‘Territorial / protective’ second (n=5); the most frequent specific emotional reference was to

“Fear/ fear-induced” (n=4). Among Japanese books 14 singular terms of aggression were identified (Table 2.5), notably less than found among the UK books, but the frequency of combined terms was higher percentage than UK (Table, 2.2). The most frequent motivational reference was to ‘Food guarding’ (n= 2), while the most frequent emotional qualification was in relation to ‘Fear-induced/ fear’ (N=5). ‘Play’ in contextual reference was also the frequent element (N=4).

Table 2. 4. Classification, number, and ranking of specific aggression terms used in UK books

<b>Three elements (Numbers of labelling aggression)</b>	<b>Labelling aggression in order</b>	<b>n</b>
<b>Motivational</b>	1. Dominance 2. Territorial / protective 3. Food and possession 4. Possessive 5. Predatory 5. Learned 5. Guarding 5. Play 5. Competitive	<b>6</b> 5 2 2 1 1 1 1 1
<b>Motivational total</b>		<b>20</b>
<b>Emotional</b>	1. Fear-induced 2. Nervous	<b>4</b> 1
<b>Emotional total</b>		<b>5</b>
<b>Contextual</b>	1. Play /Mouthing	2
<b>Contextual total</b>		<b>2</b>
<b>Total</b>		<b>27</b>

Table 2. 5. Classification, number, and ranking of specific aggression terms used in Japanese books

<b>Three elements (Numbers of labelling aggression)</b>	<b>Labelling aggression in order</b>	<b>n</b>
<b>Motivational</b>	1. Food guard 2. Possessive 2. Dominance	<b>2</b> 1 1
<b>Motivational total</b>		<b>4</b>
<b>Emotional</b>	1. Fear-induced 2. Anxiety	<b>5</b> 1
<b>Emotional total</b>		<b>6</b>
<b>Contextual</b>	1. Play (Mouthing)	4
<b>Contextual total</b>		<b>4</b>
<b>Total</b>		<b>14</b>

Eight out of 34 terms used to qualify aggression in UK media used a combination of behavioural elements (Table 2. 3). For example, one relating to motivation and emotion referred to ‘Territorial aggression’, (Table 2.6, article 1, No. 2) which was then described thus: ‘This aggression is a form of fear-induced aggression. On their own territory, dogs are much more confident about removing a potential threat than when they are elsewhere. Mature confident dogs will want to defend their people from people who are acting suspiciously’.

Six articles referred to 'Dominance aggression' (Tables 2.4 and 2.6) with one indicating the possible emotional state of fear underpinning it (Table 2.6; article 9). It further asserted that there is no evidence that dogs attempt to achieve dominance over one or several family members in order to affirm their position in the social hierarchy of the pack. By contrast, five of the other descriptions indicated that the behaviour was caused by a challenge to take the top rank or for leadership without consideration of dog's emotional state. Particularly Jan Fennel's (Table 2.6; article 4) and Cesar Millan's case studies (Table 2.6; article 5) indicated that all aggressive problems were caused by some dominance implication such as lack of owner's leadership, or poor control.

Among the Japanese texts, 7 elements out of the 21 further qualifying aggression were described by reference to a combination of 2 behavioural elements (Table 2.3). There were 4 motivational – emotional combinations, One of them (Table 2.7; article 7) states 'The dog may be driving away the person as a result of fear of other people, other dogs or sounds outside' in reference to 'Territorial aggression' i.e. driving away (motivation) and fear of strangers, other dogs sounds (emotion). The same author describes in (Table 2.7; article 7, (2)) 'Fear of strangers causes a problem without reference to a motivational element. All of the articles in Japanese explain the causes of the behaviour briefly and do not explain the circumstances clearly or enough to infer motivation and emotion. However, 3 references to pain aggression are described as emotional and contextual, e.g. 'Dogs are in pain or fearful as a result of negative experiences' (Table 2.7; article 6, No.4). Four articles about 'Mouthing' (Table 2.7; articles 2-5) do not describe circumstances adequately and did not explain how the behaviour was identified as mouthing. Moreover, even though the descriptions of the behaviour were not clearly explained, holding the muzzle was introduced as a technique for controlling bite inhibition or showing a leadership to control this problem (Table 2.7; article 4, 5). One article described "Dominance aggression" (Table 2.7; article 8, No.3) as aggressive behaviour from a dog, associated with challenging for a higher rank (motivational explanation) without any emotional element.

Table 2. 6. How articles used specific terms relating to motivation, emotion and context in 34 descriptions from UK books.

Title of book, author, Kind of article	Description of aggression	Three elements	Explanation of the causes
<p>1.The Perfect Puppy by Gwen Bailey</p> <p>Preventing and biting aggression</p>	<p>(1)Aggression towards humans (Fear-induced )</p> <p>(2)Territorial</p> <p>(3)Food and possession</p> <p>(4)Pain induced</p> <p>(5)Dominance</p> <p>(6)Chase</p>	<p>(1) Motivational and emotional</p> <ul style="list-style-type: none"> <li>▪ drive away</li> <li>▪ fear</li> </ul> <p>(2)Motivational and emotional</p> <ul style="list-style-type: none"> <li>▪ defence</li> <li>▪ fear</li> </ul> <p>(3)Motivational</p> <ul style="list-style-type: none"> <li>▪ Protect resource</li> </ul> <p>(4)Emotional and contextual</p> <ul style="list-style-type: none"> <li>▪ fear of experience</li> <li>▪ pain</li> </ul> <p>(5)Motivational</p> <ul style="list-style-type: none"> <li>▪ Taking control</li> </ul> <p>(6)Motivational and emotional</p> <ul style="list-style-type: none"> <li>▪ desire</li> <li>▪ chase</li> </ul>	<p>(1)<u>Fear is a common reason for dogs to bite people.</u> Poorly socialized dogs are likely to <u>be fearful</u>. They may start to use aggression to try and make the <u>threat go away</u>.</p> <p>(2)<u>This aggression is a form of fear-induced aggression.</u> On their own territory, dogs are much more confident about removing a potential <u>threat</u> than when they are elsewhere. Mature confident dogs will want to <u>defend</u> their people from people who are acting suspiciously.</p> <p>(3)<u>Food aggression occurs because of a need to protect a vital resource.</u> It is <u>not a problem that is related to status</u>.</p> <p>(4)<u>Dogs will often bite if we approach them when they are in pain naturally.</u> They often bite in an attempt to <u>make us stop because of fear of pain</u>.</p> <p>(5)<u>Only ambitious dogs are interested in taking control</u> and before they do so they will have assessed the strength of the people or they are <u>challenging</u>. Puppies brought up to respect the humans in the family will not challenge for leadership.</p> <p>(6)It occurs when a dog finds an outlet for its <u>desire to chase</u> by running after unsuitable moving objects. Dogs that are particularly prone to this are those from the herding breeds or hounds which are very stimulated by movement.</p>
<p>2.Dog’s mind by Bruce Fogle</p> <p>Social behaviour aggression: Dog aggression</p>	<p>(1)Dominance</p> <p>(2)Competitive</p> <p>(3)Fear-induced</p> <p>(4)Territorial / protective</p>	<p>(1)Motivational</p> <ul style="list-style-type: none"> <li>▪ Challenge</li> </ul> <p>(2)Motivational</p> <ul style="list-style-type: none"> <li>▪ Possess</li> </ul> <p>(3)Emotional</p> <ul style="list-style-type: none"> <li>▪ Fear</li> </ul> <p>(4)Motivational</p> <ul style="list-style-type: none"> <li>▪ Protect</li> </ul>	<p>(1)<u>The dog is a pack animal. An individual has a fixed rank and some dogs challenge to take a top rank.</u> Dominance aggression is caused by genetic factor and learned experience.</p> <p>(2)<u>Dogs compete with other dogs and people to protect their vital resource.</u> It is <u>related to dominance aggression</u>.</p> <p>(3)It is caused by <u>fear</u> which is mainly learned.</p> <p>(4)<u>Dogs try to protect everything</u>-they see as their possessions including territory, objects, people, infants.</p>

	(5)Predatory (6)Learned	(5)Motivational • Kill / predation (6)Motivational • Attack	(5)Dogs are <u>predatory animals</u> and it is caused particularly by breed characteristics.  (6)The behaviour is leaned from the owner to <u>attack</u> other people and dogs.
3.It's me or the dog by Victoria Stilwell:  Social problems: case studies	(1)Territorial (Barking in a garden)  (2)Barking at stranger (strangers approach home)  (3)Mouthing or biting  (4)Fear (barking at man with beard)	(1)Motivational • Drive away  (2)Motivational and emotional • drive away / protect • anxious/ nervous / excited  (3)1.Motivational and emo- tional • taking control • fear 1.Contextual • playing (no motivation) (4)Emotional • Fear	(1)It may be caused by some stimulation and <u>attempted to eliminate</u> .  (2) Possible causes will be <u>territorial, protecting, anxious /nervous, arousal</u> .  (3) Identifying mouthing or biting first. If it is mouthing, <u>no motivation</u> , if it is biting, may be <u>taking control or threatened</u> .  (4)Fear of beards and may be <u>negative experience or lack of socialization</u> .
4.The dog listener by Jan Fennel:  Case studies	(1)Nervous (Barking at stranger) (2)Dominance aggression (The dog bites visitors) (3)Food and possession (when the dog is eating, he bites owners nearby) (4)Protective (Dog is protective for one of owner) (5)Protective (Dog is protective for his owner)	(1)Emotional • Fear (2)Motivational • Challenge (3)Motivational • Challenge  (4)Motivational • Challenge  (5)Motivational • Challenge	(1)It may be caused by fear, but it is <u>related to lack of owner's leadership</u> . (2)-(5)It is <u>related to rank in a hierarchy and lack of owner's leadership</u> .

<p>5. Cesar's Way by Cesar Millan:</p> <p>Case studies</p>	<p>(1) Dominance (Dog bites neighbour's kids)</p> <p>(2) Fear (Dog bite a groomer)</p>	<p>(1) Motivational</p> <ul style="list-style-type: none"> <li>▪ Challenge</li> </ul> <p>(2) Emotional</p> <ul style="list-style-type: none"> <li>▪ Fear</li> </ul>	<p>(1) The owner spoils the dog and cannot control the dog. <u>Lack of owner's leadership</u> caused the behaviour.</p> <p>(2) <u>Lack of ownership</u> reinforces dog's fear. The owner needs to impose leadership.</p>
<p>6. Perfect dog by Cesar Millan: How to raise a perfect puppy</p>	<p>Possessive</p>	<p>Motivational</p> <ul style="list-style-type: none"> <li>▪ Protect resource</li> </ul>	<p>Dogs bark is as much our doing as <u>it is theirs</u>. The owner's leadership is necessary.</p>
<p>7. Why does my dog? by John Fisher</p> <p>Case studies</p>	<p>(1) Dominance</p> <p>(2) Guarding</p> <p>(3) Chase (Hereditary)</p> <p>(4) Mouthing</p> <p>(5) Play</p> <p>(6) Possessive</p> <p>(7) Territorial</p>	<p>(1) Motivational</p> <ul style="list-style-type: none"> <li>▪ Taking control</li> </ul> <p>(2) Motivational</p> <ul style="list-style-type: none"> <li>▪ Taking control</li> </ul> <p>(3) Motivational and emotional</p> <ul style="list-style-type: none"> <li>▪ fun</li> <li>▪ kill</li> </ul> <p>(4) Contextual</p> <ul style="list-style-type: none"> <li>▪ playing</li> </ul> <p>(5) Motivational</p> <ul style="list-style-type: none"> <li>▪ Win</li> </ul> <p>(6) Motivational</p> <ul style="list-style-type: none"> <li>▪ Possess</li> </ul> <p>(7) Motivational</p> <ul style="list-style-type: none"> <li>▪ Defence</li> </ul>	<p>(1) There are dogs that have a <u>dominant character</u> which is an inherited trait or dogs are <u>disobedient</u> and hyperactive.</p> <p>(2) The dog has <u>achieved pack leader status</u> and sees it as his or her role to be the <u>protector and decision-maker</u> for food or toys which dogs believe that these are owned by them.</p> <p>(3) There are two basic instincts; chasing for <u>fun and predatory chasing to kill</u>.</p> <p>(4) It is a <u>natural behaviour</u> and puppies need to learn bite inhibition.</p> <p>(5) The aggression is shown in play the dog is doing it <u>as statement of his rank</u>.</p> <p>(6) The behaviour of <u>protecting a resource</u> is related to the dog's <u>rank in the hierarchy</u>.</p> <p>(7) Wolf instinct will take over and in order to <u>defend boundaries</u>.</p>
<p>8. Behaviour Adjustment Training by Grisha Stewart:</p> <p>Case studies</p>	<p>Fear (Barking at humans)</p>	<p>Emotional</p> <ul style="list-style-type: none"> <li>▪ Fear</li> </ul>	<p>The dog went to the shelter at 8-10 weeks, so it is caused by <u>fear because of lack of socialization</u> towards humans.</p>

<p>9. In Defence for dogs by John Bradshaw</p> <p>Dog social behaviour</p>	<p>Dominance and fear</p>	<p>Motivational and emotional</p> <ul style="list-style-type: none"> <li>▪ Possible taking control,</li> <li>▪ fear of experience</li> </ul>	<p>There is <u>no evidence</u> that dogs attempt to <u>achieve dominance over</u> one or several family members in order to affirm their position in the social hierarchy of the pack. It is possible to be caused by <u>fearful experience</u>.</p>
<p>10. Think dog by John Fisher</p> <p>Types of behaviour problems and case studies</p>	<p>Dominance (aggressive towards owner)</p>	<p>Motivational</p> <ul style="list-style-type: none"> <li>▪ Challenge</li> </ul>	<p>In aggression towards owner, the dog is attempting <u>dominance over</u> the owner.</p>



Table 2. 7. How articles used terms referring to motivation, emotion and context in 21 descriptions from Japanese books

Title of book, author, A Kind of article	Description of aggression	Three elements	Explanation of the causes
1.How do you think? by Stanley Coren: Does punishment work efficiently?	Fear-induced	Emotional • fear	Punishment reinforces <u>fear</u> reaction and tends to make the problem worse as a result of a traumatic experience.
2.Toy Poodle breed book the dog ownership by Bunji Nishikawa, Hiroshi Koitabashi: What does a puppy need?	Mouthing	Contextual • play	It is a <u>natural behaviour</u> for puppies, but the owner needs to handle it appropriately in order to develop bite inhibition.
3.Diagnose of behaviour problems byNoriko Nakanishi: Case studies for aggressive behaviours	Mouthing (The dog mouth owners foot, clothes, hand)	Contextual • play	The dog <u>just wants to play with the owner</u>
4. Well-behaved dogs are dependent on the way of training by Satoshi Fuji Case studies for aggressive behaviours	Mouthing (The dog mouths everything around)	Contextual • play	It is a <u>natural behaviour, and in order to stop this behaviour</u> , the owner needs to show leadership <u>e.g. holding muzzle, tight muzzle with a lead.</u>
5. You can become an owner who is not made a fool of by your dog by Satoshi Fuji: Case studies for aggressive behaviours	Mouthing (The dog mouths trousers, clothes, objects)	Contextual • play	<u>It is a natural behaviour</u> but not to make it worse, <u>the owner needs to show leadership.</u>

<p>6.How to sort our biting habit of puppy: by Jun Yazaki Case studies: Biting aggression</p>	<p>(1)Food guarding • When a dog is eating • taking away a bowl (2)Possessive (toys, bones, anything in a mouth) (3)Fear ▪ When a person is trying to pat ▪ when a dog is cuddled by his owner, a person is approaching (4)Pain • put a color • blushing, • wipe paws (5)Territorial</p>	<p>(1)2 Motivational • protect resource • protect resource (2)Motivational • protect  (3)2 Emotional • Fear • Fear  (4)3 emotional /contextual • fear or pain • fear or pain • fear or pain (5)Emotional • Fear</p>	<p>(1)It is a behaviour to <u>protect food</u>.  (2)It is a behaviour to <u>protect important resource</u>.  (3)People often do not recognize a dog's <u>fearful</u> signal, which causes further problems.  (4)Dogs are <u>in pain</u> or <u>fearful</u> as a result of negative experiences.  (5)<u>Fear</u> of strangers causes the problem</p>
<p>7.How to sort out barking habit of puppy: by Jun Yazaki Case studies: Barking problems</p>	<p>(1)Territorial • Barking at visitors • Barking at stimulations through a window (2)Fear (Barking when a dog is left alone, barking at visitors) (3)Anxiety (Barking when a dog is left alone)</p>	<p>(1)2 Motivational and emotional • Driving away/ fear • Driving away/ fear  (2)Emotional • Fear  (3)Emotional • Anxiety</p>	<p>(1)The dog may be <u>driving away</u> the person as a result of <u>fear</u> of other people, other dogs and sounds outside.  (2)A dog that does not get used to being alone feels <u>fear</u> and <u>fear of other people</u>.  (3)A dog that does not get used to being alone feels <u>anxiety</u>.</p>
<p>8.Dog upbringing and training:</p>	<p>(1)Territorial • Barking at visitors</p>	<p>(1) 2Motivational and emotional • protect territory/ fear</p>	<p>(1) It is caused by <u>fear</u> and <u>territory protection</u>.</p>

<p>by Mashimi Nakai</p> <p>Behaviour problems:</p>	<ul style="list-style-type: none"> <li>▪ When a doorbell rings</li> <li>(2)Food guarding (when a dog is eating and taking away a bowl)</li> <li>(3)Dominance (when owner command a dog to get down from a sofa)</li> </ul>	<ul style="list-style-type: none"> <li>▪ protect territory/ fear</li> <li>(2)Motivational</li> <li>▪ Protect resources</li> <li>(3)Motivational</li> <li>▪ Challenge</li> </ul>	<p>(2) It is caused by <u>protecting food</u> and it is associated with <u>dominance behaviour</u>.</p> <p>(3) It is associated with the dog taking a <u>higher rank in hierarchy</u>.</p>
--	--	---	--

There were 11 singular qualifications of aggression in the UK magazines (Table 2.8). Two of these referred to motivation (Aggression for controlling the situation), nine emotion, and none context. The most frequent explanation for emotional aggression was ‘Fear / anxiety’, ‘Fear’ and ‘Frustration’. Japanese magazines had 8 qualifications of aggression (Table 2.9). Two of these referred to motivation (territorial, possessive). The most frequent elements were 3 emotional and 3 contextual, which included ‘Play (Mouthing)’ ‘Play (tumble play)’. There were no combination elements in Japanese magazines.

Table 2. 8. Prevalence of qualifications of aggression relating to either motivation, emotion or context in UK magazines

<b>Three elements (Numbers of labelling aggression)</b>	<b>Labelling aggression</b>	<b>n</b>
<b>Motivational</b>	1. Aggression for controlling the situation	1
	1. Food guarding	1
<b>Motivational total</b>		<b>2</b>
<b>Emotional</b>	1. Fear / anxiety	2
	2. Fear	2
	3. Frustration	2
	3. Fear / frustration.	1
	3. Pain	1
3. Enjoyable	1	
<b>Emotional total</b>		<b>9</b>
<b>Contextual</b>		0
<b>Contextual total</b>		<b>0</b>
<b>Total</b>		<b>11</b>

Table 2. 9. Prevalence of qualifications of aggression relating to either motivation, emotion or context in Japanese magazines

<b>Three elements (Numbers of labelling aggression)</b>	<b>Labelling aggression</b>	
<b>Motivational</b>	1. Territorial aggression	1
	1. Possessive aggression	1
<b>Motivation total</b>		<b>2</b>
<b>Emotional</b>	1. Fear	2
	1. Fear / anxiety	1
<b>Emotional total</b>		<b>3</b>
<b>Contextual</b>	1. Playing (mouthing)	2
	2. Playing (tumble play)	1
<b>Contextual total</b>		<b>3</b>
<b>Total</b>		<b>8</b>

There was only one instance in which emotional and contextual qualifications were combined in UK magazines, when describing “Mouthing” (Table 2.10; article 1). The mouthing article described how a 9 month old Labrador jumps up and mouths the owner (play - contextual). Although it is possible that his behaviour is with intent of play the author goes on to say frustration is behind it. The most frequent term used to qualify aggression was based on “fear” (Table 2.8). This may indicate that professionals e.g. trainers, behaviourists, consider aggressive behaviour is often a response to fear.

Table 2. 10. How articles used the terms relating to motivation, emotion and context in UK magazines  
 12 descriptions from UK magazines: DT= Dogs Today, YD=Your dog magazines, DM=Dog monthly magazines

Kind of article	Description of aggression	Three behavioural elements	Explanation of the causes
1. Personal story (DT) By Victoria Stilwell Trainer/ behaviourist	Mouthing towards the owner	Emotional and contextual ▪ play ▪ Frustration	9 months old, Labrador, male is kept in a kitchen behind a child gate most of the day. He is <u>jumping up and mouthing the owner</u> . His behaviour is <u>playing but frustration</u> is behind it.
2. Personal story (DT) By Karen Napthine Trainer/behaviourist	Fear /anxiety (aggression towards owner's brother)	Emotional ▪ Fear / anxiety	10 months old, GSD, male is growling at owner's brother. The dog is very sensitive and cautious. The problem has been worse since the owner used a rattle can when the dog growled at large dogs or any other appropriate occasion following a dog trainer's advice. This <u>anxiety</u> may be related with other unknown people.
3. Personal story (DT) By Victoria Stilwell Trainer/ behaviourist	Aggression towards the husband for controlling the situation	Motivational ▪ Controlling situations	Rescue dog, Toy poodle, male, growls and barks at the husband when he tries to move close to his wife. The trainer who advised previously said the behaviour was the dog's dominance behaviour, but it is <u>not his dominance behaviour</u> . He is <u>controlling the situation to feel good</u> and his wife reinforces his behaviour e.g. cuddle when he showed aggressive behaviour.
4. Special feature about 'Barking' (DT) Why do dogs bark? By Chirag Patel Trainer/ behaviourist	4 main reasons for HDAB ▪ Pain ▪ Anxiety / fear ▪ Frustration ▪ Excitement (joy)	▪ Emotional ▪ Emotional ▪ Emotional ▪ Emotional	'Barking' is <u>underlying emotion</u> . Dogs are threatened when animals, people approach or feel <u>pain</u> . They also bark when they are <u>fearful</u> , feel <u>frustration</u> , <u>enjoyable</u> .
5. Special feature: Crisis of confidence (YD) By Carol Price Trainer/ behaviourist	Fear	Emotional ▪ Fear	Dogs lose their confidence with <u>fear experiences</u> , e.g. <u>physical punishment</u> , when they get older, neutered / spayed. It is important to understand that a dog's confidence can be lost easily at any age with a trigger. It may be related to aggression.
6. Special feature for Barking behaviour	Frustration (aggression towards people)	Emotional ▪ Frustration	3 years old, Cocker Spaniel, male barks at people and dogs when he sees them through the window. He is a very lively dog, so he may not have enough exercise and gets <u>frustrated</u> . As a working breed, he needs more stimulation and exercise.

Case Study: Barking at person is passing outside the house (YD) By Carolyn Menteith And Gwen Bailey Trainer/ behaviourist			
7. Special feature: Mouth-ing off with case study (DM)  By Adam Beral Trainer/ behaviourist	Fear ( towards owners, strangers, dogs, anything around him)	Emotional ▪ Fear	Re-homed Australian Cattle dog, male growls and barks at any stimulus. It seems the reason behind this behaviour is that the dog has <u>not been socialized enough and been fearful.</u>
8. Special feature: 'Brush with aggres-sion'(DM)  By Ross McCarthy Trainer/ behaviourist	Fear / frustration (the dog shows aggressive behaviour when the owners try to do grooming and touching)	Emotional ▪ Fear/frustration	11 months old, GSD, female re-homed dog. She does not like grooming and touching. She is very sensitive and does <u>not get used to it.</u> The behaviour might be <u>caused by fear.</u>
9. Q&A: Guarding food (DM)  By Howard Kirby Dog trainer	Food guarding	Motivational ▪ Protect resource	The dog growls at the owner <u>when she asks her to sit and wait before the meal. It may be dog's food guarding behaviour.</u>

Table 2. 11. How articles used the terms relating to motivation, emotion and context in Japanese magazines  
 8 descriptions from Japanese magazines: Inuno Kimochi=IK, Shi-ba=Sb, Aiken no tomo=Ant

Kind of article	Description of aggression	Three behavioural elements	Explanation of the causes
1. Special feature: Prevent of dog aggression (IK) by Jun Yazaki Dog trainer	Mouthing	Contextual • play	The reasons for mouthing: puppies want to <u>mouth everything</u> , a dog runs off to <u>mouth human hands, foot as a play</u> .
2.Special feature: The behaviours which dogs often show in everyday life (IK). by Yukari Takeuchi Vet/ behaviourist	Pain aggression	Emotional • Fear	When the owner touches the body, the dog growls <u>based on fear</u> . If it is in a particular part of the body, it may be <u>caused by pain</u> .
3. Special feature: Why dogs bark? (IK) by Hitomi Fujii Vet / behaviourist	• Fearful / anxiety  • Territorial (caution / warning)	Emotional • Fear Motivational • driving away	• When a dog is groomed by a stranger, brushing/ washing, wiping, it is <u>fear based</u> .  • When the doorbell rings, visitors, deliverers come, a dog is <u>defensive</u> .
4. Special feature: Control mouthing and play biting, Q & A (IK) by Miyuki Toda Dog trainer	• Mouthing and play biting • Play biting towards foot	Contextual • play Contextual • play	The dog has not learned what he can use the <u>mouth for and playing</u> with hands and foot. It also happens while <u>the dog is playing with his owner</u> .
5. Case Study (Sb) by Yukari Takeuchi Vet / behaviourist	Possessive: Protect her food bowl	Motivational • Protect resource	Shiba-inu, 1 year and 3 months old, female, shows aggressive behaviour to <u>protect a food bowl</u> when the owner puts the hand into the cage, e.g. taking away the food bowl or other things It started when the dog was 3 months old and the owner was bitten.
6. Border Collie's Behavioural problems (Ant) by Kae Makiguchi Vet / behaviourist	Excessive barking	Emotional • Fear / anxiety	There are several reasons for excessive barking – <u>fear / anxiety</u> when a dog is alone, when a dog meets people or dogs.

The UK internet sites were run by dog trainers (Appendix Table 2.7), whereas half of Japanese internet sites were operated by pet product companies (Appendix Table 2.8). There were many more descriptions of forms of aggression on internet sites than in books and magazines in both UK and Japan (Tables 2.12 and 2.13).

There were 23 singular qualifications of aggression in the UK internet sites (Table 2.12). The most frequent motivational elaboration was ‘Dominance’ (n=4). The term ‘Control complex/ dominance’ was grouped with ‘Dominance’ as they represent a similar goal. The most frequent emotional qualification was ‘Fear-induced aggression’ (N=5) followed by frustration (n=2). Article 1 described “Misdirected” aggression (Table 2.14; article 1, No.4) as “Dogs can misdirect their aggression towards the person who is attempting to break up the fight” in context. However, the term “Redirected aggression” has been used in the behavioural literature to describe this phenomenon (Kuhne *et al.*, 2012; Siracusa, 2016) and this seems to reflect a poor understanding of the scientific literature.

Japanese Internet sites had 27 singular qualifications of aggression (Table 2.13). As in the UK, the most frequent motivational category was ‘Dominance’ (n=9) including “Aggression towards a member of family”. The most frequent emotional one was ‘Fear, fear-induces, Fear/nervous’ (n=5).

Table 2. 12. Ranking of aggression qualifications relating to motivation, emotion and context on UK Internet sites

	<b>Labelling aggression</b>	<b>n</b>
<b>Motivational</b>	1.Dominance (including control complex/ dominance)	<b>4</b>
	2.Territorial/ protective aggression	<b>2</b>
	3.Food guarding aggression	<b>2</b>
	3.Possessive aggression	<b>1</b>
	3.Defensive aggression	<b>1</b>
	3.Predatory aggression	<b>1</b>
	3.Protective aggression	<b>1</b>
<b>Motivational total</b>		<b>13</b>
<b>Emotional</b>	1.Fear (including nervous) aggression	<b>5</b>
	2.Frustration aggression	<b>2</b>
<b>Emotional total</b>		<b>7</b>
<b>Contextual</b>	1.Misdirected aggression	<b>1</b>
	1.Play	<b>1</b>
	1.Pain	<b>1</b>
<b>Contextual total</b>		<b>3</b>
<b>Total</b>		<b>23</b>



Table 2. 13. Ranking of aggression qualifications relating to motivation, emotion and context on Japanese Internet sites

	<b>Labelling aggression</b>	<b>n</b>
<b>Motivational</b>	1.Dominance (including aggression towards a member of family) aggression	<b>9</b>
	2.Territorial aggression	3
	3.Predatory aggression	3
	3.Possessive aggression	3
	4.Play aggression	1
	4.Maternal aggression	1
<b>Motivational total</b>		<b>20</b>
<b>Emotional</b>	Fear aggression	<b>5</b>
	Pain	1
<b>Emotional total</b>		<b>6</b>
<b>Contextual</b>	Play (Mouthing)	1
<b>Contextual total</b>		<b>1</b>
<b>Total</b>		<b>27</b>

There were 5 elaborations of aggression which referred to both motivational and emotional elements in UK Internet sites. One referred to ‘Status related or dominance’ (Table 2.14; article 5, No. 4) and explained an association between possessive behaviour and frustration; ‘It is usually seen in the form of challenging or controlling-aggression’. ‘This includes possessive behaviour. There is some association with frustration when the dog is not getting its own way such as access to food, treats, toys, rooms or being denied access to people’. Possessive behaviour is considered to be related to protecting resources (motivational) and the threat of removal of something the dog likes (frustration - emotional) (Mills and Zulch, 2010).

“Target related aggression” (Table 2.14; article 5, No.2) described a common behaviour towards a post-person, people at the door, passers-by or people leaving the house; which it was suggested may be caused by ‘fear-based and linked to territorial aggression’. However, frustration might more logically relate to this problem at an emotional level, e.g., not to access the person by door. Another article referring to ‘Territorial’ aggression (Table 2.14; article 1, No.3), explained this as being possible caused by either dominance (taking control of the situation) or fear behaviour. There is no evidence that territorial behaviour is associated with a dog’s dominance behaviour (Mills and Zulch, 2010, Bradshaw *et al.*, 2009), and it is more generally associated with the systems controlling frustration (Panksepp 1998). These cases highlight the generally poor quality of understanding of the basis of HDAB by authors on popular internet sites, who tend to be trainers.

In the Japanese sites, there were 7 elaborations of aggression. All of them emphasised both motivational and emotional states, although they described contexts briefly with few examples. A case of ‘Play aggression’ (Table 2.15; article 1, No.5) was described by reference to

motivational-emotional elements: motivational (challenging for a higher rank), emotional (fear) and social play or seeking (a tumble play by lack of exercise) which did not appear to link logically. Nine out of 10 sites (Table 2.15; articles 2-10) described 'Dominance' aggression without reference to emotional states and there were 3 sites which explained only one type of dog aggression- 'Dominance aggression' (Table 2.15; articles 5-7). All of them emphasized that the behaviour was motivated by a dog's alpha syndrome or challenging for a higher rank. One site (Table 2.15; article 7) stated that most of the aggressive behaviour in dogs was caused by dominance. These results are not generally consistent with current scientific thinking on the subject (Bradshaw *et al.*, 2009) and question the quality of internet based information

Table 2. 14. How articles used the terms related to motivation, emotion and context on UK Internet sites to qualify aggressive behaviour

UK 28 descriptions of Internet sites

Kind of article	Description of aggression	Three behavioural elements	Explanation of the causes
1. Dog trainer's site: Different types of dog aggression by Stan Rawlinson	(1)Fear/nervous (2)Frustration or redirected (3)Territorial  (4)Misdirected  (5)Control complex/ dominance (6)Chase /predatory	(1)Emotional ▪ Fear (2)Emotional ▪ frustration (3)Motivational and emotional • taking control • fear/anxiety (4)Contextual ▪ misdirected (5)Motivation ▪ taking control (6)Motivational and emotional • chase • excited / anxious	(1) <u>Fearful behaviour</u> can be used through lack of early socialization, bad breeding and lack of handling at an early age. (2)Dogs that are physically restrained or restricted can escalate into <u>unprovoked attack and agitation</u> . (3)When dogs display aggression to strangers only on the home property garden, house, or yard, yet do not respond aggressively to strangers on neutral territory, then territorial aggression is the likely diagnosis. There may be <u>two causes for the behaviour – dominance or fear / anxiety</u> . (4)Dogs can <u>misdirect their aggression towards the person</u> who is attempting to break up the fight. (5)The aggression is shown towards humans and other dogs <u>as taking control</u> , and also members of the family this could lead to an attack if not controlled in the early stages. (6)The behaviour can be directed at anything that <u>stimulates a chase response by their dog becoming aroused, or anxious by the movement</u> .
2. Dog trainer's site: Interdog and Interhuman Aggression by Stan Rawlinson	(1)Fear  (2)Protective  (3)Dominance	(1)Emotional ▪ fear (2)Motivational ▪ protect things (3)Motivational ▪ Alpha's role	(1) <u>The majority of fear based aggressions are Predatory, Territorial, Protective and Nervous / Fear aggression</u> . It is rare for the dog to have just one of the problems and the worse combination is <u>Dominance and Nervousness / Fear aggression</u> . (2)Dogs bark at someone at the door, protect the car, bark at people moving past. All social animals exhibit some <u>protective aggression</u> . (3)Dogs with dominance aggression are regarded as " <u>Alphas</u> ", able to control people and get things their own way.
3. JRT rescue organization: Correcting Dog Aggression	▪ Dominance	Motivational ▪ Challenge	True dominance based dog aggression ( <u>challenging</u> ) is less common than fear aggression. Dominance aggression towards other dogs and people is influenced by several factors. Male dogs (especially entire males) are more likely to display this type of aggression than female dogs are, and several terrier breeds are particularly prone to developing this type of aggression.
4. RSPCA, FAQ:	(1)Possessive	(1)Motivational	(1) <u>Dogs take away something or someone it values highly</u> .

Canine aggression, FAQ By David Ryan	(2)Frustration  (3)Defensive	<ul style="list-style-type: none"> <li>▪ take away value highly</li> </ul> (2)Emotional <ul style="list-style-type: none"> <li>▪ frustration</li> </ul> (3)Motivational <ul style="list-style-type: none"> <li>▪ defence</li> </ul>	(2) Dogs are <u>frustrated</u> if they cannot do something they really want to do.  (3) Dogs use aggression for their <u>personal safety</u> .
5. The Animal behaviour clinic: Dog Aggression by Dr. David Stands	(1)Territorial and fear-based  (2)Target-related  (3)Predatory  (4)Status related or dominance  (5)Fear-based	(1)Motivational and emotional <ul style="list-style-type: none"> <li>• driving away</li> <li>• fear</li> </ul> (2)Motivational and emotional <ul style="list-style-type: none"> <li>• driving away</li> <li>• fear</li> </ul> (3)Motivational <ul style="list-style-type: none"> <li>▪ Chase / nip / bite</li> </ul> (4)Motivational and emotional <ul style="list-style-type: none"> <li>▪ challenging or controlling</li> <li>▪ frustration</li> </ul> (5)Emotional <ul style="list-style-type: none"> <li>▪ fear</li> </ul>	(1)The behaviour commonly displayed around the home and surrounding territory when a dog <u>reacts (moves it away) to a perceived threat</u> or noise or when strangers or other dogs are viewed as <u>threatening</u> . (2)The behaviour commonly displayed as window-barking at post-person, people at the door, passers-by or people leaving the house <u>in order to repel them</u> . This behaviour is commonly ' <u>fear-based</u> ' and linked to <u>territorial-aggression</u> and is extremely-addictive in some dogs. (3)The behaviour leads to a person or dog being <u>chased and nipped or bitten</u> . (4)It is usually seen in the form of <u>challenging or controlling-aggression</u> . This includes <u>possessive behaviour</u> . There is some association with <u>frustration</u> when the dog is not getting its own way such as access to food, treats, toys, rooms or being denied access to people. (5)It is directed towards other dogs, owners or strangers. A dog, if hyper-alert or made <u>fearful</u> , may growl, bark at, lunge at, snap, nip any target that is <u>considered a threat</u> .
6. K9 Behaviour Services Aggressive behaviour dogs	(1)Fear  (2)Food related  (3)Play (4)Territorial and Protective  (5)Possessive	(1)Emotional <ul style="list-style-type: none"> <li>▪ fear</li> </ul> (2)Motivational <ul style="list-style-type: none"> <li>▪ taking control</li> </ul> (3)Contextual <ul style="list-style-type: none"> <li>▪ play</li> </ul> (4)Motivational <ul style="list-style-type: none"> <li>▪ protect resources</li> </ul> (5)Motivational <ul style="list-style-type: none"> <li>• Protect resources</li> </ul>	(1) Fear aggression is caused by <u>lack of socialization</u> and can develop and commonly be seen round 18-24 months of age. (2) The aggression may be <u>an early sign of dominance aggression</u> . (3)It may occur if a puppy was not taught appropriate ways to <u>play</u> . (4)The dog identifies something that has importance and is <u>worthy of protecting</u> . e.g. an area of land, a space in the home, the local park that they regularly visit. As a Protective aggression, objects, animals and humans. (5)The dog displays aggression to <u>protect the resource</u> , e.g., favourite toy to be taken away.
7. Canine concept: Dog aggression to people	(1) Territorial	(1)Motivational <ul style="list-style-type: none"> <li>▪ chase away</li> </ul>	(1)They will only show aggressive tendencies if they perceive the 'trespasser' as a threat; when this happens their primary objective is to <u>chase away</u> the threat.

	(2) Fear	(2)Emotional • fear	(2)If dogs are placed in a situation from which they cannot escape, they may resort to aggression. If dogs discover through experience that aggression resolves a <u>fearful situation</u> it further reinforces the success of this strategy.
	(3)Dominance	(3)Motivational • take control, improve ranking	(3)If they perceive that another member is weaker than themselves they will display aggressive behaviour as a means to <u>take control</u> and <u>improve their ranking</u> .
	(4)Food	(4)Motivational • protect resource	(4)Food aggression occurs when a dog feels it needs to be aggressive in order to <u>protect a vital resource</u> .
	(5)Pain	(5)Contextual • pain	(5)When a dog is in pain we may inadvertently cause further pain and <u>accidentally</u> aggressive behaviour may occur when moving them or trying to help.

Table 2. 15. How articles used the terms related to motivation, emotion and context on Japanese Internet sites to qualify aggressive behaviour

Japanese 32 descriptions of Internet sites

Kind of article	Description of aggression	Three behavioural elements	Explanation of the causes
1. A veterinarian's site who live in Germany: Dog behaviour problems	(1)Territorial (2)Aggression towards other people (3)Aggression towards members of family (4)Fear (5)Play	(1)Motivation and emotional • driving away • fear / anxiety (2)Motivational and emotional • driving away • fear (3)Motivational and emotional • challenge • fear (4)Emotional • fear (5)Motivational and emotional • take control • fear/social play or seeking	(1)Dogs bark at people or dogs that are invading their territory. It is caused by <u>driving way</u> , lack of socialization, <u>fear/anxiety</u> from negative experience, breed characteristics. (2)Dogs show aggressive behaviour towards other people. It is caused by <u>driving way</u> , lack of socialization, <u>fear / anxiety</u> from negative experience, hormone influence, breed characteristics. (3)Dogs show aggressive behaviour towards a family member. It is caused by dogs' <u>rank in hierarchy</u> , or <u>anxiety by owners' inappropriate attitudes</u> . (4)It is mainly towards other people and dogs. It is caused by lack of socialization, <u>negative experience</u> , owners' <u>forceful attitudes</u> . (5)Dogs are playing aggressively. It is caused by <u>lack of socialization which may be related to fear</u> , <u>lack of exercise which may be related to a tumble play</u> , a rank in hierarchy.
2. Dog club site: Dog aggression written by veterinarian	(1)Dominance (2)Territorial (3)Fear (4)Predatory (5)Maternal	(1)Motivational • showing alpha rank (2)Motivational • driving away /take control (3)Emotional • fear (4)Motivational • kill / predation (5)Motivational • protect	(1)The dog shows aggression towards a family member. It is caused by <u>alpha syndrome</u> , the owner obeys her dog. (2)The dog shows aggression towards people or dogs who approach his territory. The behaviour is motivated to drive them away, but it may be caused by <u>dominance or protecting the owner</u> . (3)Fearful behaviour is caused by <u>lack of socialization, negative experience</u> during puppyhood. (4)The dog shows aggressive behaviour towards <u>movement of animals or objects</u> . (5)It is a natural behaviour for a bitch. It is a behaviour to protect infants and <u>kind of dominance</u> behaviour.
3. Dictionary of life with a dog: Dog behaviour problem: dog bites	(1)Aggression towards a member of family	(1)Motivational • challenge (2)Motivational and emotional	(1)It is Dominance aggression and it is caused by a dog's challenge to earn <u>higher rank</u> or showing his dominance.

	(2)Aggression towards unfamiliar people	<ul style="list-style-type: none"> <li>• protect</li> <li>• fear</li> </ul>	(2)It is caused because the dog <u>does not have confidence in his owner</u> and <u>protects the owner</u> or <u>the dog is fearful of unfamiliar people</u> .
4. Private Animal Clinic: Dog aggressive behaviour.	(1)Territorial  (2)Dominance	(1)Motivational <ul style="list-style-type: none"> <li>• driving away</li> </ul> (2)Motivational <ul style="list-style-type: none"> <li>• challenge</li> </ul>	(1)The dog shows aggression towards people or dogs who approach his territory. The dog has <u>learned</u> that when he barks, visitor or deliverer <u>goes away</u> and barking behaviour is <u>reinforced</u> . (2)The dog challenges to take a <u>higher position</u> when he does not admit the owner to be a leader.
5. Dog's happy life: Dog aggression	Dominance aggression	Motivational <ul style="list-style-type: none"> <li>• showing a rank</li> </ul>	<ul style="list-style-type: none"> <li>• When a dog understands <u>his position is higher than members</u> of the family, and the dog shows aggressive behaviour towards them. It is dominance behaviour.</li> </ul>
6. AnimalLabo: How to sort out a Dog dominance aggression	Dominance aggression	Motivational <ul style="list-style-type: none"> <li>• take control</li> </ul>	<ul style="list-style-type: none"> <li>• Dogs relationship with humans is like parents and children. If owners <u>spoil their dogs</u>, <u>the dogs tend to show inappropriate behaviour including dominance aggression</u>.</li> </ul>
7. Japan Police dog association: Dogs which shows dominance aggression	Dominance aggression	Motivational <ul style="list-style-type: none"> <li>• take control</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Most causes of dog aggression are dominance</u>.</li> <li>When the owner cannot <u>show leadership</u> to her dog or spoils the dog, the dog often shows alpha syndrome.</li> </ul>
8. Dog trainer's site: Dog aggression	(1)Maternal aggression  (2)Play aggression (Dominance) (3)Dominance aggression (4)Fear aggression  (5)Pain aggression  (6)Territorial aggression	(1)Motivational and emotional <ul style="list-style-type: none"> <li>• protect</li> <li>• anxiety</li> </ul> (2)Motivational <ul style="list-style-type: none"> <li>• win</li> </ul> (3)Motivational <ul style="list-style-type: none"> <li>• take a higher position</li> </ul> (4)Emotional <ul style="list-style-type: none"> <li>• fear</li> </ul> (5)Emotional <ul style="list-style-type: none"> <li>• fear</li> </ul> (6)Motivational and emotional <ul style="list-style-type: none"> <li>• protect</li> </ul>	(1)Hormonal influence may cause <u>anxiety</u> and dog <u>threaten</u> any persons who approach puppies and <u>move them away</u> . (2)When dogs are playing, <u>excitedly</u> and <u>playing aggressively to win</u> (3)If the owner is not able to show leadership to the dog, the dog may try to <u>obtain a higher position</u> . (4)It is occurred when the dog is <u>threatened</u> . (5)When the dog <u>feels pain</u> it is a natural occurred and <u>the dog may be fearful</u> . (6)It is caused by <u>protecting the dog's territory</u> . When the dog is <u>kept in a limited space</u> , <u>lack of exercise</u> may reinforce the behaviour.

	(7)Possessive aggression (8)Predatory aggression	<ul style="list-style-type: none"> <li>• frustration</li> </ul> (7)Motivational <ul style="list-style-type: none"> <li>• possess</li> </ul> (8)Motivational <ul style="list-style-type: none"> <li>• kill / predation</li> </ul>	(7)It is a kind of instinctive dog behaviour to <u>possess objects, food</u> which are important for the dog. (8)It is caused by <u>breed characteristics to chase movement</u> .
9. How to keep a dog: Dog aggressive behaviour	(1)Possessive (2)Dominance	(1)Motivational <ul style="list-style-type: none"> <li>• possess</li> </ul> (2)Motivational <ul style="list-style-type: none"> <li>• take control</li> </ul>	(1) It is caused by <u>possessing objects or food</u> which are important for a dog. It may be associated with <u>dominance behaviour</u> . (2)When owners cannot show leadership, the dog tries to take the role and does not obey them. Most behaviour problems are considered to be caused by <u>alpha syndrome</u> .
10.Dictionary of Pet Disease: Dog aggressive behaviour	(1)Dominance (2)Fear (3)Playing (mouth-ing) (4)Possessive (5)Territorial (6)Predatory	(1)Motivational <ul style="list-style-type: none"> <li>• take a higher rank</li> </ul> (2)Emotional <ul style="list-style-type: none"> <li>• fear</li> </ul> (3)Contextual <ul style="list-style-type: none"> <li>• play</li> </ul> (4)Motivational <ul style="list-style-type: none"> <li>• possess</li> </ul> (5)Motivational <ul style="list-style-type: none"> <li>• protect</li> </ul> (6)Motivational <ul style="list-style-type: none"> <li>• kill / predation</li> </ul>	(1)It is called <u>Alpha syndrome</u> and dogs are taking a higher rank than owners. (2)It is shown when dogs were <u>threatened</u> . <u>Lack of socialization</u> is one of the big factors. (3)Dogs have <u>learned that playing with a human hand is enjoyable</u> . (4)It is shown when <u>things which are very important for dogs are taken away by owner or dog</u> . It may also be <u>underlying dominance behaviour</u> . (5)It is a behaviour to <u>protect members of family</u> . The problem is the dog tried to protect them. It may be related to <u>dominance behaviour</u> . (6)The aim of the behaviour is to <u>kill the target</u> . Children are often targeted by dogs.



## 2.4. Discussion

This qualitative analysis did not conduct any coding reliability analysis, e.g., inter-rater agreement which create 10% coding in each popular media for both UK and Japan. Therefore, bias might be produced and it may have affected the results.

Such different types of articles in each media between two countries varied in length and the number of pages describing aggression. For example, a “Personal story” often has more pages than other types of articles, thus the personal story type articles tend to describe more information, e.g., stimulus, circumstance than other types of article. Most of articles which described possible causes or circumstances of aggressive behaviour only had a few sentences in the book or magazine, thus limiting what was included leading to incomplete information and description.

It should also be noted that some authors wrote more than one of the articles analysed in the same media or wrote for both a book and a magazine. For example, from UK books this related to Cesar Millan (Table 2.6; article 5, 6) and from Japanese books Satoshi Fujii (Table 2.7; article 4, 5), Jun Yazaki (Table 2.7; article 6, 7). Jun Yazaki also wrote an article of a special feature in a magazine (Table 2.11; article 1). Two personal stories in the UK magazines were written by Victoria Stilwell (Table 2.10; article 1, 3), and Yukari Takeuchi wrote different types of articles (Special feature, case study) in Japanese magazines (Table 2.11; article 2, 5). Among Internet sites, Stan Rawlinson (Table 2.14; article 1, 2) wrote 2 websites. Therefore, the results may reflect a particular person’s point of view and level of knowledge, rather than the societal norm. Cesar Millan described only motivation and indicated that the cause was a lack of owner leadership in both books, Satoshi Fujii described in both of his books the importance of showing leadership to control mouthing behaviour. It can be speculated that the authors who were well known and wrote more than one article or book are popular among the public and the public may then follow their view. Inappropriate or inconsistent information from such authors may cause problems.

As it has already been mentioned, the internet searches produced different types of site in the UK and Japan. It can be considered that this issue affected the quality of information and made the data less comparable, but this reflects what was most popular in the two countries and this in itself may be valuable to know. Different search terms or more terms could be used in future studies to lessen this bias, such as ‘advice for dog aggressive behaviour’, or a change in the criteria to use only websites created by individual authors or professionals in the field. This result, however, points to a big difference between the two countries. While in Japan it would seem dog owners look up pet companies for advice on the Internet, in the UK dog owners look more often for information from professionals, including those who are known in the field (i.e. behaviourists who are also celebrities like Cesar Milan and Victoria

Stilwell). Which is better quality is a matter of some debate, since celebrity status does not guarantee scientific quality and private companies may have a specific agenda they wish to push. As predicted, the style of presentation for articles was different in books and magazines between UK and Japan. In Japanese books and magazines articles were presented mainly with photos or illustrations and information on how to handle the problem (Figure 2.3, 2.5, 2.6). There were explanations of causes or circumstances in only a few sentences or no explanation. The method of the presentation may be influenced by the 'High-context culture' typical in Asia (Hall, 1976, 2000; Cho & Cheon, 2005; Würtz, 2005; Hermeking, 2005; Singh & Hu, 2005; Richardson & Smith, 2007), e.g., the Japanese public tend to be only interested in solutions or pay attention to visual information rather than written information. Even the captions of photos or illustrations had short texts, introducing examples on how to handle the aggressive behaviour without mention of possible causes and circumstances. UK books and magazines tend to use more descriptive explanations using words (Figure 2.4, 2.7). Preference for written information may be related to 'Low-context culture' (Hall, 1976, 2000; Cho & Cheon, 2005; Würtz, 2005; Hermeking, 2005; Singh & Hu, 2005; Richardson & Smith, 2007). Articles based on personal stories for a behavioural problem tended to describe: what the problem is, why it happened, in which circumstance and how to handle it. The explanations of special features, Q & A had more room to describe the above elements; the problem, causes, circumstances and solution in order. The media in the UK were more likely to be informative than Japanese ones. Moreover, the photos with well-known dog owners instructing how to handle a dog were used to show their potential power for both books and magazines in Japan. This may be related to 'high power-distance cultures' (de Mooij, 1998; Cho and Cheon, 2005; Singh and Hu, 2005; Richardson and Smith, 2007), whereas UK books and magazines may be related to 'low power-distance cultures' (de Mooij, 1998; Cho and Cheon, 2005; Singh and Hu, 2005; Richardson and Smith, 2007) which did not include such photos and did not show a status power.

Such different styles of presentation in the two countries may be influenced by another cultural aspect, i.e., how people in Japan view their life and what people value in their life in regards to owning a dog. They usually have a busy life and the dog's role may be their relaxation (Ishii, 2006), i.e., working long hours at their workplace every day or even at the weekend and they tend to spend only time sitting beside their dog when they have time (it has been changing recently as people have a day off during the weekend, but still many people are committed and stressed by their jobs, Kawakami and Haratani, 1999). Therefore, they tend to require solutions quickly. Reading an extended article may not be pragmatic as they may be interested only in solutions. Thus, magazines with pictures and schematic solutions

showing the information the dog owners need will probably sell more in Japan. The articles are being tailored to the public interest.

On the other hand, there has been an increase concern for animal and dog welfare in the UK (Fraser, 1997; Miele *et al.*, 2011; Dawson *et al.*, 2016), which demands a deeper understanding of the problems affecting an individual dog. This may be due to the activities of animal welfare organizations such as RSPCA, Blue cross and Dog Trust, which are not so well developed in Japan.

Therefore, appreciating how information needs to be delivered to the public in different countries via the media is essential to bringing about similar levels of understanding. These results indicate that there are clearly differences in the emphasis given to different aspects of HDAB in the media of two culturally distinct countries and this may reflect wider differences in the population in relation to this subject.

Figure 2. 3: Example of an article of a Japanese book

Chapter4 ● 「ガブガブ本気噛み」にはどう接する?

## Let's Try!

噛みつかせないためのファントレ

### Point 1 散歩の時間帯やコースを見直す

愛犬が苦手とするタイプの人や怖がるイヌに合わないように、散歩の時間帯やコースを変えましょう。たとえば、子どもが苦手なイヌだったら、登下校や夕方時間帯を避け、散歩コースでは子どもの多い場所に連れていかないこと。通学路や公園の近くなどは、なるべく通らないようにしましょう。

### Point 2 噛みつく相手の姿が見えたらリードでコントロールしてルート変更

散歩中に、イヌが近寄ってきたり、苦手なタイプの人がきたりするのが見えたら、手前で道を変えようとするのがいい。リードで首を絞めないように気をつけながら誘導し、別ルートを探しましょう。どうしてもすれ違わない場合は、イヌと相手の間にあなたの体を入れて拒根をつくるように歩いて、そばに近づけないようにします。

### Point 3 急に相手が近寄ってきたらきちんと断る

イヌ好きの人や、愛犬と散歩中の人や、話しかけようとして近寄ってきたら、まずは避けましょう。目を合わせずに、足早にサッと通り過ぎるのがコツです。それでも近くに寄ってきたら、「うちはコッパリと」うちのこ怖がりなんです。すみません!」

### より安全にコントロールするなら

イヌの鼻先にフードを握った手を近づけて、イヌを誘導します。

## 散歩タイムの噛みグセ

# 散歩中に出会った人やイヌに噛みつきまます

声をかけてきてくれた知人や、近寄ってきたかわいイヌ。あなたは仲良くしてほしいと思っているのに、肝心の愛犬はキバをむき出してガルルッ!

人の場合

嫌がっているのに無理にあいさつさせる

おびえのサインを見逃して、うっかり頭をなでさせたり、無理にイヌのイヌと引き合わせようとする。防衛しようと噛みつくことがあります。

イヌの場合

こんなことをしていませんか?

慣れない人に食べ物を与えさせる

イヌが怖がる相手に食べ物を与えてもらい、慣れさせようとする飼い主をよく見かけますが、これは人を咬んだ経験のあるイヌに実践するのはとても危険。相手が手を引っ込めようとするとともに反射的にパクッと手を咬んでしまうことも。

人の場合

慣れていない人に食べ物を与えさせる

やんのかゴラ!

愛犬の噛みグセに合ったファントレのコースをチョイス

噛みつく相手は特定の人だ

Yes

Aコース  
イヌの行動をコントロールして噛みつきをストップ

No

Bコース  
グッズでしっかりガードして噛みつきをストップ

秋田犬 2歳 太郎くん

Figure 2. 4. Example of an article of a UK book

## CHAPTER 10

# Preventing biting and aggression

This chapter explains the main causes of aggression in dogs and suggests ways to proof your puppy against situations that may cause him to bite. Puppies rarely bite in earnest until they reach the age of about seven months, unless the provocation is extreme or they have a genetic make-up that makes them highly reactive. Before this time, they usually have little confidence in their own abilities and tend to rely on other strategies, such as running away or appeasement.

As puppies mature, and as their confidence grows, they become more likely to resort to aggression to solve their problems. Owners are often unaware that problems are developing until their puppy grows up and becomes aggressive. By understanding why dogs bite, by watching for early signs that all is not well and by removing the necessity for dogs to take matters into their own hands (or mouths!), owners can greatly reduce the chances that their puppy will grow up to be a biter.

### Excessive play-biting

The purpose of play-biting is to play, so it is not real aggression. However, puppies have sharp teeth and some have strong jaws, so they can do quite a lot of damage to skin and muscle, especially when they are older, if their 'playing' is uncontrolled.

Puppies will play-bite moving targets naturally when young, and need to be taught to orientate their play onto toys instead of hands, arms and feet (see page 96). This is a relatively simple process, but some puppies will play-bite harder and in a more determined way than others, particularly if this behaviour has been encouraged. It becomes even more urgent to direct the play-biting onto toys if the puppy lives with children or elderly people (who have much thinner skin).

### Walk away

To control excessive play-biting, first try the method outlined on page 96. Work hard at this, using a bigger toy if necessary to prevent the puppy biting your skin accidentally. If you are still having difficulty, or if your puppy is determined to bite you, get up and walk away

**Standing up and turning away is the best way of bringing an end to the game and your puppy's play-biting.**





Figure 2. 5. Examples of an article from a Japanese magazine part 1

噛む! 噛む! 噛む!

カブッ! カブッ!

なかなか直らない

噛みグセ

何がイケナイの?

飼い主さんの対応次第で、ますます噛む犬になる!

子犬のあま噛み、成犬の噛みグセ……。何とかやめさせようと、飼い主さんもいろいろと試しているはず。それなのに直らないなら、対応の仕方が悪いのかもしれませんが。噛まれたときの対応をもう一度見直して、愛犬の噛みグセをやめさせましょう。

監修・文 / 伊藤亜希子 撮影 / 浜田一男

撮影にご協力いただいたご家族

埼玉県 大槻則子さん、  
亜未さん  
左はキャリーくん  
(オス・3才 / チワワ)、  
右はカル太くん  
(オス・11カ月 /  
トイプードル)

埼玉県 萩原稔久さん、  
祐子さん  
ルーキーくん  
(オス・2才 / 柴)

監修・指導  
戸田美由紀先生  
ジャパンケネルクラブ、日本  
警察犬協会および日本動物  
病院福祉協会認定イン  
ストラクター。埼玉県全域  
を中心に活動中


※この特集のモデル犬は実写には本気噛みをする犬ではありません。

60



Figure 2. 6. Examples of an article from a Japanese magazine part 2

## やりがちなNG対応 10



噛まれたら、「ダメよ! 痛い!」と  
**何度も叱っています** ×


**イケナイ理由** 「飼い主さんが騒いで楽しい!」と感じて、遊び感覚に

噛まれるととっさに「痛い、痛い、ダメ」と言葉を連呼してしまいがち。しかし、この言葉の連呼が、犬には「飼い主さんが自分を見て騒いでいる」と感じられ、楽しい気分になり、飼い主さんの反応がおもしろくて、何度も繰り返すようになります。

コレで噛みグセストップ!

### 低く、太い声で一言だけ言おう

噛まれたら、「痛い」「ダメ」など一言だけ言いましょ。犬は、声のトーンが高いとより楽しく感じるため、できるだけ低く、太い声を出すのもコツ。



愛犬が驚いて口を離したら効果あり。噛むことをやめない、一瞬離してもすぐに噛む場合は下の方法を試して

それでも効果がなかったら……

### 室内でもリードをつけて、噛んだらリードを持って引き離そう


たとえあま噛みでも、人を噛む経験はさせないにこしたことはありません。リードで犬を自分から引き離し、噛み続けられないように。



噛んだらすぐにリードを持ち、噛み続けられないよう犬を引き離します。愛犬とは視線を合わせません



愛犬が、座ったり寝たりして落ち着いたら、愛犬が興奮しない程度に、落ち着いた声でひと言ほめて



**飼い主さんが愛犬を見られないときは……**

目を離したときに、子供や家具が噛まれることも。飼い主さんが愛犬を見られないときは、クレートやサークルへ。

## 犬にとって“噛む”行為とは……

**子犬は噛みたい欲求が強く、噛んで当たり前です**

子犬は、歯が生え替わる前に口の中がムズムズするために、本能的に噛むのです。子犬が人の手や足、家具などを噛みたがる、いわゆる「あま噛み」は成長過程のひとつ。愛犬にとって、噛んだときの飼い主さんの反応が楽しかったり、家具の噛み心地がいいと、ますますあま噛みするようになります。

**遊びやトレーニングなどの楽しみで、噛む欲求が解消できるもの**

成長とともに、飼い主さんと遊ぶ、散歩をする、しつけトレーニングをするなど、人の手足や家具を噛むことより楽しいことが見つかったら、ほかのことで噛みたい欲求を解消できるように。ただし、噛むことより楽しいことが見つからないと、噛む行動はなくなりません。

しかし

## 噛んだときの対応によっては

**ますます楽しくなって噛むのが趣味のように**

手や足を噛まれると痛いから逃げる、家具や靴などを噛んでいたら、おやつを見せてやめさせる……。飼い主さんの対応がじつは愛犬を喜ばせている場合、成犬になっても噛む行動は減らず、クセになってずっと続いてしまいがち。

**飼い主さんが怖くなって、本気噛みを招くことも**

たたく、マズルをつかむなどの体罰を加えると、犬によっては飼い主さんのことが怖くなる。その結果、飼い主さんの手が近づくと、体罰を加えらるかと恐れるあまり、その手を噛んでくる場合もあります。

噛みグセが直らない  
やりがちなNG対応10はこちら!



Figure 2.7. Example article from a UK magazine

Feature by **Karen Naphine**



## A brewing Storm

An initial growl to one particular visitor escalated to aggressive barking and lunging at everyone he met...

**R**od called me following the vet referral of his 10-month-old GSD, Storm, with what is, sadly, an all-too-familiar story.

He had purchased Storm at 10 weeks old, had him vaccinated and, when allowed out, introduced him to other people and dogs on walks and all seemed to be going well. However, early on, Rod's brother, Dan, a large and loudly spoken man, had visited and Storm had growled at him. Initially, both Rod and his brother had laughed at what was then a small puppy, but over the following weeks and months, whenever Dan visited, Storm would continue to growl at Dan and otherwise try to avoid him.

By now, Storm was himself growing into a large dog. To deter this behaviour, Rod scolded Storm, but as the behaviour continued, he sought the advice of a dog trainer, who advised him to use a 'rattle can'. He was told to fill a metal can with small pebbles, secure it at the top, and vigorously shake it at Storm

whenever he growled at Dan.

At first it looked as if it was working - Storm stopped growling and backed away, and this continued for a couple of visits. However, on the third or fourth occasion, Storm not only growled but was barking aggressively and lunging at Dan. The behaviour had significantly deteriorated and, over a few more months, Storm offered these aggressive displays to all male visitors, then to males he saw out in the street, then all visitors including females, and then people full stop! Rod sought advice from his vet, who referred him to me.

At consultation, I established that Storm was perceived by the family to be a generally reactive dog, with his activity levels at peaks and troughs. They also felt that he sometimes appeared to be depressed. He was difficult to walk because of his reactions towards people and, as money was tight for the family, he was being fed a poor-quality diet that contained a number of chemical additives, such as

colourants to make it look more appetising, flavourings to make a low-quality protein source taste better, and preservatives for an extended shelf life.

Although a whole list of factors can lead to behaviour and training problems in dogs, including genetic and environmental influences, for some dogs the direct effects of diet can be dramatic and override the valiant efforts of owners. Dogs are as individual as we are and can have individual sensitivities and intolerances - for example, to chemical additives and/or to one or more of the contents of the food itself or to the ratio of proteins to carbohydrates ingested. Not only can this result in physical problems, but it can impact on brain serotonin levels. Increasing the serotonin levels by changing/manipulating the diet, therefore, can assist in the treatment of such problems and aid in the learning of alternative or new behaviours.

I also explained that ongoing fear/anxiety can, over time,

adversely affect a dog's overall mood-state, which could again result in depleted serotonin levels. We therefore started by changing Storm's diet to a good-quality lamb and rice complete feed, which proved cost-effective because of its higher quality (Rod did not need to feed as much). We also increased the number of highlights in Storm's day, such as tuggy and fetch games, food searches and scatters, squeaky toys and chewing opportunities.

I asked Rod to throw the rattle can away, explaining to him that Storm was perceiving the noise as punishing and, as he was already fearful of Rod's brother, Dan, the noise only added to his anxiety. It confirmed that Dan's presence was bad news, which was why Storm's attempts to make him go away had increased. Because he was then always punished for aggressive displays, by Rod shaking the can, Storm started to generalise his negative association to include all men, then all people!



In each media in the UK and Japan, small numbers of combination of elements (motivational – emotional or emotional – contextual) of aggression were indicated. Most qualifications of aggression referred to either only motivation without considering emotional states or only emotion without considering motivational states or did not describe either clearly. However, as discussed in the previous chapter, it is important to understand all three elements – motivation, emotion and context – to make reliable inference about the cause of a given incident of HDAB (Mills and Zulch, 2010; Mills *et al.*, 2013; Mills *et al.*, 2014; Mills *et al.*, 2015), references to motivation, e.g. territorial, dominance, and food guarding, were most common in both countries and this can produce only general solutions. The main emotional focus was on the role of fear / anxiety in HDAB in both countries, but it needs to be appreciated that there are other emotions in dogs which may lead to a display of aggressive behaviour, especially frustration.

The findings of this chapter show that there is little consideration given to the inclusion of both motivation and emotion in the description of HDAB and that when this is done, there is not a coherent framework for integrating these and the result is often scientifically confused. Media descriptions that use weak evidence for diagnoses may misinform the reader or offer insufficient information for the reader to extrapolate to their own problems.

The most frequent motivational label used for HDAB was ‘dominance’ in both UK and Japan. In the UK books, 6 out of 10 articles (6 different authors) in books described ‘dominance aggression’. Further, 4 out of 6 articles (66.6%) described the motivation as challenging family members for a dominant role or an association with the dog’s rank in the hierarchy and lack of owner leadership. There was only one description of dominance aggression in Japanese books. However, this one also described it as an association with the dog’s rank in the hierarchy. In the Japanese Internet sites, 9 out of 10 articles (if including the description ‘aggression towards members of a family’, 10 out of 10) referred to dominance aggression in a way similar to the UK books. UK internet sites also had a high frequency of reference, 5 out of 7 articles (71.4%). Recent scientific literature argues that there is no direct evidence of dominance as a motivating factor in dogs and the information commonly reported in the media about dominance is based on the study of captive wolves (van Hooff & Wensing, 1987; Mech, 1999, 2000; Bradshaw *et al.*, 2009) whose relevance to captive dogs is refuted. In the UK, some books (Bruce Fogle’s, *The Dog’s Mind*, 1992, and John Fisher’s, *Think dog*, 2001), are old publications (written more than 15 years ago) and have not been updated. This may affect the results, but also indicates that these popular, but perhaps outdated books are still being read and perhaps influencing dog own-

ers. Moreover, 3 of 10 articles which described dominance aggression as a form of alpha syndrome associated with the dog's rank in the hierarchy in Japan stated that this was also the most common cause of dog aggression. The Japan Police dog association in the Internet site (Table 2.12, article 7) has also affirmed that 'Mostly the cause of dog aggression is dominance' associated with a lack of owner leadership. From these indications, it seems many professionals and the general public in Japan may still believe that rank and hierarchy is commonly associated with aggression in dogs. This factor may significantly impact on people's attitudes towards dogs.

As stated in the previous chapter, the number of people who are using the Internet has increased every year all over the world. In 2017, 90% of the total population in the UK had access to it, compared with 89% in 2016 (Office for national statistics, 2018), while in 2017 in Japan, 80.9 % of the total population had access to it, compared with 72.6% in 2006 (Ministry of International affairs and communications, 2018). People who are facing dog-behaviour problems frequently use the Internet to search for a solution (anicom Japan, 2012). A characteristic of the Internet is that, anyone can write articles and anyone can access it. Thus, there is a bigger risk that people can easily select and rely on inappropriate information and from people without qualification or experience. There were 5 sites in Japan and 3 sites in UK which did not indicate an author, editor or organizer of the site. Moreover, most of sites in the UK were by dog trainers who have more paragraphs to advertise their services rather than delivering information in order to educate owners. Who creates the site may affect the quality and bias of information.

## **2.5. Conclusion**

This qualitative investigation found that motivation and emotion are not considered consistently in relation to the elucidation of aggression in media outlets in both UK and Japan. The different types of articles which deliver information to the public, fail to describe aggression in relation to three key behavioural elements (motivation, emotion and context) which are important for understanding the dog's behaviour. 'Dominance' is still described as a major cause of aggression in the majority of media outlets, in both the UK and Japan. Such inconsistent media information and differences in countries may result in a wider view of societal cultural influence on people's perception of HDAB and its management. In the next chapter, cultural influences on people's perception of HDAB in wider populations will be examined further.

## **Chapter 3:**

### **Internet survey of cultural differences in dog management to human-directed aggressive behaviour of dogs in English and Japanese language populations**

This chapter examines cultural differences and similarities between English and Japanese language respondents, especially about dog management in relation to aggressive behaviour via an internet survey and, furthermore, the role of specific components within the model is categorised.

#### **3.1. Introduction**

In the previous chapter, a qualitative analysis of descriptions of human-directed aggressive behaviour (HDAB) of dogs in the popular media (popular books, magazines, and internet sites) between the UK and Japan was undertaken. Particularly, it investigated if the information provided was based on a coherent framework recognising motivation, emotion, and/or context. The results indicated that inconsistent information was delivered in both countries, although the limitations of information was different in the countries, and that the methods used for information delivery was also different (in the UK, information was more often presented in texts, and in Japan information was more often presented using a visual approach). These differences may be influenced by wider societal-cultural differences, which may also influence people's perception of HDAB.

In order to examine whether such differences and other cultural factors influence people's perception of HDAB, an internet survey was developed for English and Japanese speaking respondents focusing on three types of information:

- general demographic factors
- dog management culture and
- people's perception of HDAB.

Demographic factors were identified to investigate cultural differences between the two survey respondent groups, and become aware of other important demographic differences that might need to be considered. As described in Chapter 1, dog management may be related to cultural

factors which are attributed to attitude, belief, knowledge and expectations concerning dogs that may also influence their perception of HDAB.

Therefore eight factors of dog management culture were considered:

- Collectivist or individualist tendencies
- Attitude towards aggression
- Attitude towards HDAB
- The role and value of dogs
- Types of information sought
- Source of knowledge
- Handling experience
- Training methods

Many factors are potentially related to people's perception of HDAB. Some relate to broad demographic factors including the general cultural background of the individual, others relate to more dog-specific factors. At its simplest, it might be that different cultures use the term aggression to refer to different behaviours by dogs (Chapters 1 and 2) and this may also affect people's responses. The potential complexity of the relationships of interest is illustrated by a simple example: it might be that when a dog starts growling at a person who is passing by in close proximity while walking on the street, Japanese (nationality) dog owners, who do not have significant handling experience with a dog (handling experience), may prioritise concerns relating to behaviour around other people in public (collectivism) whereas Western owners in a similar situation may focus more on their dog's emotional state than on the wider public, regardless of their experience level, which might differ in general for perception of HDAB between the two cultures.

A model of the potential relationships between the three types of factor described (demographic, dog management and perception of HDAB) was proposed for testing in the current study (Fig 3.1). The focus of this chapter is on a descriptive analysis of the content of the intervening variables (yellow, red boxes) making up the three main variables of interest (blue ovals), including the outcome of data reduction methods to simplify the structure of the relationship between items in the survey, also the chapter considers differences between English and Japanese language respondents.

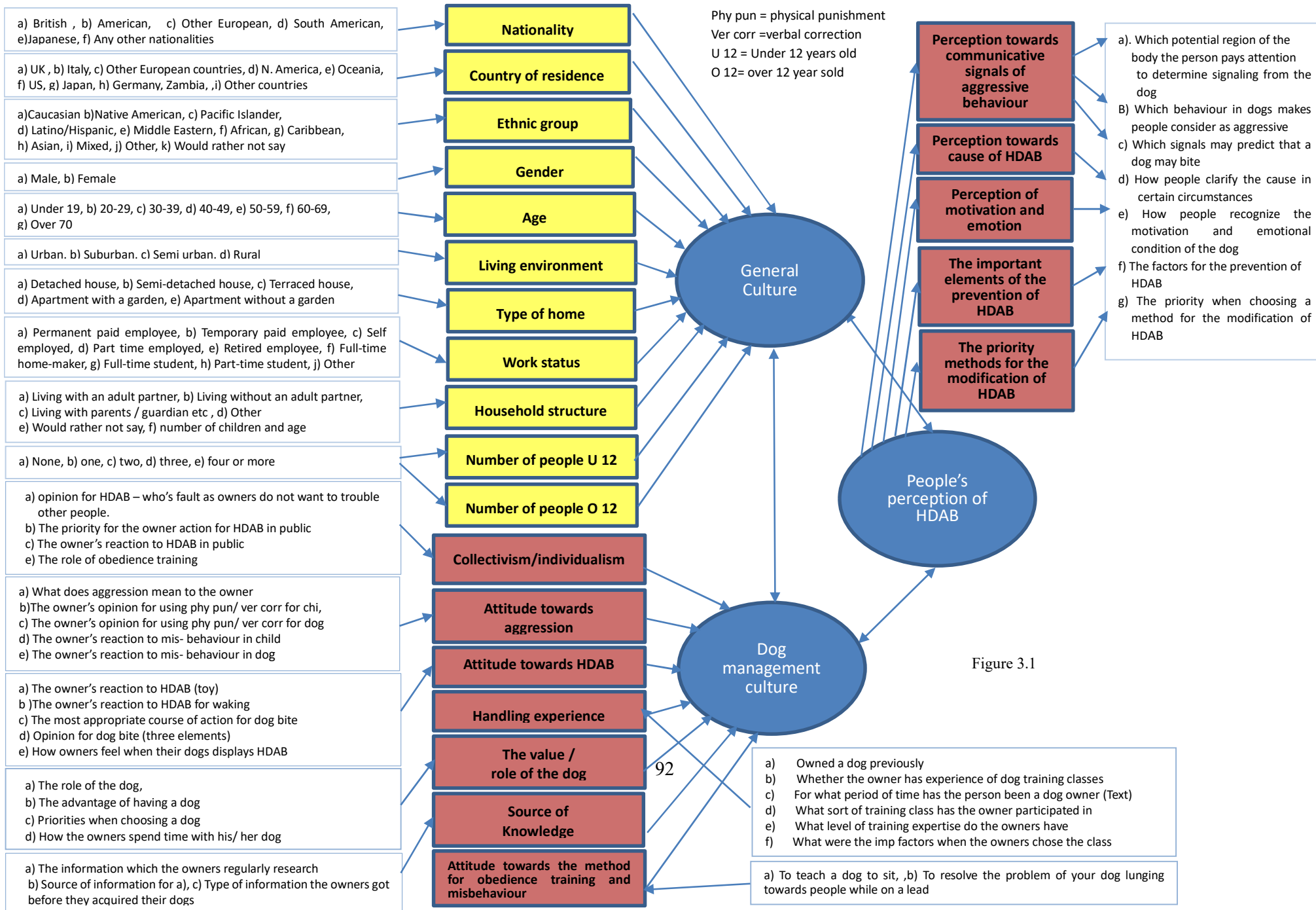


Figure 3. 1. Model of the relationship between general culture and dog management factors with people's perception of HDAB by dogs (blue ovals). The diagram illustrates potential relationships between aspects of people's perception of HDAB in dogs assessed in the survey and explanatory variables of interest. Items in the survey are given in the white boxes. Yellow boxes indicate demographic variables, red boxes are potentially important intermediate latent variables assessed from a range of items in the survey. Arrows indicate the flow from independent variable assessed in the survey through to the dependent variables assessed in the survey (white box, right hand side), with interactions between the three main factors of interest (blue ovals).

## 3.2. Materials and methods

### 3.2.1. Ethics statement

This project was approved by the Ethics committee of University of Lincoln of Lincoln's School of Life Sciences on the 10<sup>th</sup> of June, 2010. Consent was obtained from all participants for the questionnaire answers and the participants' information was treated as confidential.

### 3.2.2. Questionnaire design

The questionnaire "Survey of cultural influences on the perception of behaviour in dogs" was designed for two target populations: dog owners and non-dog owners. The bilingual (English and Japanese language) internet survey was developed with native speakers proof-reading each language version. The content was informed by previous studies which assessed people's attitude towards both dogs, e.g. Pet Attitude Inventory (Wilson *et al.*, 1987), Pet attitude scale (Templer *et al.*, 1981) and Modification of the pet attitude scale (Munsell *et al.*, 2004), and people e.g. people's attitude for aggression (Buss and Perry 1992) and attitude towards aggression scale (ATAS) (Jansen *et al.*, 2006). The questions for "Individualistic" or "Collectivistic" tendency were based on the concept of the Hofstede model (2011). As hypothesised, people's "attitude towards aggression" for a child and dog may be similar (as described in Chapter 1), therefore the same questions were created for them to have a comparison between the owner's attitude towards a child and dog. The questionnaire was divided into sections on 'dog management' and 'perception of HDAB' alongside demographic items.

To validate the questionnaire, two steps were conducted: Firstly, the supervisors (Professor Daniel Mills and Professor Todd Hougue) verified the justification of each question and item in relation to objective of the study. Secondly, the design went through an iterative process to develop a logical structure with piloting among both English and Japanese language dog owners. Ambiguous items were altered and some removed if they took excessive time to

complete. The final questionnaire consisted of 48 items (Appendix, Table 3.1) and incorporated nominal, ordinal, and interval measurement level scales. Instructions for completion were included in the title page. The first section included demographic questions relating to respondent background, the second focused on cultural factors which may influence dog management in relation to HDAB and the third their perception towards HDAB; these sections had the following summary content:

- I. Introduction: explaining the aim of the study, the inclusion criteria, e.g. over 18 years old, instructions to fill in the questionnaire and the author's contact details in case there were any questions.
- II. Eleven demographic questions: nationality, ethnic group, country of residence, gender, age groups, living environment, type of home, current work status, household structure, number of people under 12 years old and over 12 years old who live in the household.
- III. Twenty four questions for dog management factors aimed at assessing (Table, 3.2):
  - Collectivist-individualistic attitudinal tendencies
  - Attitude towards aggression
  - Attitude towards HDAB
  - The role and value of dogs
  - Types of information sought and sources of knowledge
  - Handling experience
  - The training methods
- IV Ten questions for perception of HDAB (Chapter 4 Table, 4.1)
  - Perception towards communicative signals of aggressive behaviour
  - Perception towards cause of HDAB
  - Perception of motivation and emotion
  - The perceived important elements for the prevention of HDAB
  - Perceived priorities for the modification of HDAB
- V Thank you page: participants were asked to share the survey, provide an email address in case they would like to get feedback of the study

Each question was set with a "Forced response". Some of the questions followed a "question logic", with the following question dependent on the answer to the previous question. For example, for the question "Have you had experience of your dog / dogs exhibiting growling, snarling, snapping or biting behaviour towards an adult or child ?", there were two options: "Yes" and "No". If the respondent selected "No", the respondent would be taken to the next

section. If the respondent answered “Yes” the respondent would continue in the same section which delivered several further questions about aggressive behaviour in the dog. This reduced the risk of people dropping out because they were faced with irrelevant questions. Participants also had the chance to exit the survey and return to it at a later time. They could also go back at any time and review their answers before submitting the survey. When the final version of the questionnaire was ready, it was implemented into the online survey software Qualtrics (Qualtrics, Provo, UT, USA),

English: [https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_1B3YZQ2Tr5smZjn](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_1B3YZQ2Tr5smZjn)

Japanese: [https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_egMqDo0ZP0s3hxH](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_egMqDo0ZP0s3hxH)

It was then answered by a third party who checked the grammar, question logic, and missing options. After some final corrections, a pilot study was conducted with several other third parties in order to check the design of the questionnaire, e.g. if the system works and how long it takes to complete.

### 3.2.3. Participants recruitment and subjects

In order to recruit dog owners and non - dog owners from English and Japanese language populations, social media was used primarily as it has been successful in attracting attention and the link was distributed to numerous people quickly. On Facebook, groups for dog owners or people who have owned dogs were searched for by key words such as “Dog”, “Dog group”, or “Dog training”. Groups for non-dog owners were searched for by “Cat”, “Cat community”, “Cat group”, as well as study groups by “Psychology” and “Science”. The selected groups were asked to share the link to the survey to other Facebook interest groups and individuals, including: dog trainers, dog lovers, animal protection, animal psychology and human psychology, the study group of animal behaviour, science news, and science study groups. Certain groups on Facebook provided links to the survey with their corresponding pages on Twitter. Respondents to the English language version were recruited quickly. Respondents for the Japanese language were more difficult to obtain in sufficient numbers. Therefore we contacted the Japanese kennel club to support our recruitment for the survey. They recruited respondents through their monthly paper and website. From October 2016 to April 2017, the questionnaire was available to the public and the link to the survey distributed using different social media sites, e.g. Facebook and Twitter.

A total of 2139 participants answered the English version of the questionnaire (Non-dog owners=263), of which 1146 dog owners were used for the analysis after removing respondents due to missing data. 1309 participants answered the Japanese version of the



questionnaire (non-dog owners=321), of which 632 dog owners were used for analysis after removing respondents due to missing data.

Only dog owners were used in the analysis of Internet survey.

### 3.2.4. Data analysis

#### 3.2.4.1. Demographics

The categories of demographics are summarised in Table 3.1.

Some categories were subsequently grouped as follows;

##### **Nationality:**

The fifty nationalities of dog owners responding to the English questionnaire (Appendix Table 3. 2) were categorised into 8 groups (2 large populations of nationalities, 3 continents, Japanese, Chinese and Other). The nationality for dog owners responding to the Japanese questionnaire (Appendix Table 3.3) needed only 2 of these groups (Japanese and Chinese).

##### **Country of residence:**

The forty nine countries of residence of dog owners responding to the English questionnaire (Appendix Table 3. 4) were categorised into 10 groups (2 large populations of country of residence, 3 continents, United states, Japan, Germany, Zambia and other countries). The Japanese questionnaire used 5 of these groups (Appendix Table 3. 5) – Italy, United States, Japan, Germany and Zambia.

Table 3 1. Summary of the demographic categories used in responses EQ=English questionnaire, JQ=Japanese questionnaire

Nationality	Country of residence	Ethnic group	Gender	Age	Living environment	Type of home	Current work status	Household structure	Number of under 12 year olds living in the household	Number of over 12 year olds living in the household
EQ 1. British 2. Italian 3. Other European 4. North American 5. Oceanian 6. Japanese 7. Chinese 8. Other nationalities JQ 1. Japanese 2. Chinese	EQ 1. United Kingdom 2. Italy 3. Other European countries 4. North America (Except US) 5. Oceania 6. United states 7. Japan 8. Germany 9. Zambia 10. Other countries JQ1. 1. Japan 2. Italy 3. United States 4. Germany 5. Zambia	1. Caucasian 2. Native American/ Indigenous 3. Pacific 4. Islander 5. Latino/Hispanic 5. Middle 6. Eastern African 7. Asian 8. Caribbean 9. Mixed multiple ethnic group 10. Other 11. Would rather not say	1. Male 2. Female	1. Under 19 2. 20-29 3. 30-39 4. 40-49 5. 50-59 6. 60-69 7. Over 70	1. Urban 2. Suburban 3. Semi urban 4. Rural	1. Detached house 2. Semi-detached house 3. Terraced house 4. Apartment/ Flat with a garden 5. Apartment/ Flat without a garden	1. Permanent paid employee 2. Temporary paid employee 3. Self employed 4. Part time employed 5. Unemployed 6. Retired employee 7. Full-time home-maker 8. Full-time Student 9. Part-time student 10. Other	1. Living with an adult partner in a long term relationship e.g. married 2. Living without an adult partner 3. Living with parents / guardian etc. 4. Living in a commune 5. Other 6. Would rather not say	1. None 2. One 3. Two 4. Three 5. Four or more	1. None 2. One 3. Two 4. Three 5. Four or more

#### 3.2.4.2. Dog management factors

The seven dog management factors used were related to collectivism or individualism, attitude towards aggression, attitude towards HDAB, the value and role of the dog, type of information sought and source of knowledge, handling experience, and training methods (Table 3.2). In order to identify the cultural tendency for collectivism or individualism, the respondents' prioritization of different responses when their dogs showed aggressive behaviour towards people was used, as the items had been designed to distinguish these tendencies. Attitudes towards HDAB considered the three components of attitude, namely affective, behavioural, and thinking (Katz and Stotland, 1959; Berscheid and Walster, 1978; Jones, 1984; Coleman *et al*, 2016).

Measurement items for each factor, the scoring system, and the statistical methods used are summarised in the Table 3.2. Categorical variables were converted into either binary variables, or total scores when asked to choose all that applied from a list of several variables, e.g. type of information sought or sources of knowledge.

#### 3.2.5. Statistical analysis

All statistical tests were performed using IBM SPSS Statistics 22.

The measurement items, scoring system and statistical methods for dog management factors are summarised in Table 3.2 with further details described below:

1. Demographics: a chi squared test was used to identify significant differences between English and Japanese language respondents for the 11 categorical variables. Given the number of tests and the size of the survey population, the p-values were corrected by Bonferroni method.
2. Dog management factors:
  - i. Collectivism and individualism

Seven items were selected from the 4 questions in this section which were supposed to be related to either a collectivist or individualist tendency (Table 3.2. Factors of dog management: 2. collectivism and individualism). Within the questions that required the top 3 choices to be made, 'I do not want to make my dog's behaviour worse' was subsequently considered to contain both collectivist and individualist aspects, e.g., owners may be concerned about not only their dogs, but also other people because their dogs may cause trouble

for other people if their dog gets worse. Therefore, this item was removed from consideration. The remaining items were then arranged so that a high score indicated a more collectivist tendency for each item (ranked 1<sup>st</sup> or strong agreement with a collectivist statement or strong disagreement with an individualist statement). The difference between English and Japanese language respondents was then assessed using a Mann Whitney U test as the data did not follow a normal distribution.

ii. Attitude towards aggression

In order to reduce the 39 ordinal variables (6 points Likert scale) related to the first three questions (Table 3.2, Factors of dog management: 2. Attitude towards aggression, questions 1-3) and identify which were important to explain the variation within population, a principal component analysis (PCA) was conducted for each one of the three questions (i.e. question 1: 17 items, question 2: 11 items and question 3: 11 items) using the population of both English and Japanese language respondents together. The PCA was performed using varimax rotation and the number of principal components to extract was determined by using the Kaiser criterion and the Scree plot. Items with a loading greater than .40 were retained. The principal components (PCs) were then used to generate component scores for each respondent.

Afterwards, the items related to questions 4 and 5, i.e. twelve items in each, (Table 3.2, 2. Attitude towards aggression: Score system- Reaction to misbehaviour of a child, dog) were divided into 2 groups: 1) violent reactions (5 items): scold him/her, smack him / her, hit / kick him / her, throw an object at him / her and shout or scream at him/ her, and 2) non-violent reactions (7 items): Ignore him / her, give comfort to him / her, do nothing / blame myself, shut him /her out from the room, take away something he likes, send him / her out to another room. "Other" was re-classified into either of the groups depending on the open answer provided by the respondents. From this, two groups were defined as violent reaction: use of loud voice, wild actions and non-violent reaction: use of negative punishment methods, i.e., taking something importance away or use gentle actions.

The two groups were assessed for differences in each one of the PC scores using a Mann Whitney U test. The hypothesis was that the respondents who selected items relating to a violent reaction towards a child or dog would score significantly differently to the non-violent group for the PC scores. In this way convergent validity would be shown between these two parts of the survey.

iii. Attitude toward HDAB

Five questions containing 48 items related to attitude toward HDAB (see Table 3.2. Factors of dog management: 3.Attitude towards HDAB, measurement items, question 1-5) and their scales were standardized by being converted into binary scores. In order to determine how items grouped together and identify similarities and differences between the English and Japanese language respondents in relation to their attitude toward HDAB, a four step procedure including a hierarchical cluster analysis using a Jaccard measure of distance for binary variables (Finch, 2005) was used:

Step 1

A hierarchical cluster analysis (HCA) was performed on each language data set, i.e. English and Japanese language respondents.

Step 2

Common items in defined clusters (groups) were identified between the two previous HCA responses

Step 3

Each specific language population was then equally divided into 2 groups, (i.e. half population of English language respondents and half population of Japanese language respondents) and a new HCA was performed for each of the 4 new groups, in order to test the reliability of the structure within each language set.

Step 4

The common items that appeared to group together in the two previous results were used in a new cluster analysis of the whole population, i.e. both English and Japanese language respondents together, in order to define the clusters for the population as a whole.

iv. The value and role of dog

Similar to the previous section, the 57 items from the 4 questions in this section were converted into binary variables and a hierarchical cluster analysis was performed (see Table 3.2. Factors of dog management: 4.Attitude towards HDAB, questions 1-4). The aim was to reduce the data and better understand how these items grouped together in the two populations, i.e. English and Japanese language respondents.

v. Types of information and sources of knowledge

For this analysis, the variables of three questions were used, but two, i.e. ‘Which information people seek before they gain a dog’, and ‘Which information people regularly research’ were merged to form a single score, e.g., ‘Goods/accessories’ was included with ‘Bedding, leads, toys and accessories’, while the third item ‘Where people seek the information from’ was used as it was (i.e. a binary score). After the variables of two questions were merged, two measurements: 11 variables regarding ‘type of information’ and 10 variables related to ‘source of knowledge’ excluding ‘Not applicable’ and ‘Other’ had their items summed separately resulting in each respondent having one final score for each of the two measurements, i.e. 11 scores for ‘type of information’, and 10 scores for ‘source of knowledge’ (see Table 3.2. Factors of dog management: 5. types of information and sources of knowledge, scoring system).

In order to identify how the variables clustered together for each of two measurements in the two populations, hierarchical cluster analysis (HCA) using Ward’s linkage (more sensitive than other methods for clustering as the clusters which the variance was minimised were merged) was used on the data for each population (English and Japanese language respondents separately), (i.e. four HCAs in total).

Afterwards, all variables that clustered together in both of the populations were used in a new HCA of the whole population.

vi. Handling experience

In order to explore differences in the level of handling experience with dogs between English and Japanese language respondents, the items: ‘Have you had experience of dog training classes?’ and ‘What level of training expertise do the owners have’ were selected and converted in to two groups: High level of experience and basic experience (Table 3.2. Factors of dog management: 6. Handling experience, Scoring system used). Mann Whitney U-test was performed.

vii. Training method

The question ‘to resolve the problem of your dog (on a lead): lunging towards people while on a lead’ (Table 3.2. Factors of dog management: 7. Training method) was selected to explore the training methods used for HDAB of dogs. 12 items were converted into two

groups: those relating to positive reinforcement (4 items) and positive punishment (8 items). The negative punishment: “Ignore the behaviour” was excluded as it did not fit clearly into either group. The item “Other” was re-classified into either of groups if an open answer was provided by the respondents. Each respondent had one final score for each one of the two groups. In order to identify differences of the training methods of HDAB of dogs between English and Japanese language respondents, Mann Whitney U-test was performed.

Table 3 2. Summary of statistical analysis for responses related to “Dog management”

Factors of Dog management	Constituent questions and items	Scoring system used (numbers refer to preceding column, Q refers to number on survey questionnaire)	Statistical method applied
<p><b>1. Collectivism or Individualism</b></p>	<p><b>1: Attitude towards HDAB in general</b>            Collectivism:            i. It is the owner’s fault in all situations            ii. It should have strong legally enforceable penalties</p> <p><b>2: Attitude towards HDAB in public</b>            Collectivism:            i. I would not want to cause irritation in other people            Individualism            ii. I would not want to stress my dog</p> <p><b>3: Reaction to HDAB in public</b>            Collectivism            i. I would apologize to the person            Individualism            ii. I would blame the victim for provoking my dog</p> <p><b>4: The role of dog obedience training:</b>            collectivism            i. Obedience training for a dog is important for owners to teach their dogs the rules about how to behave with other people and dogs</p>	<p>Measurement of 1 (Q. 40) and 4 (Q. 34):            6 point Likert scale converted into 4 point scale as below:</p> <p>Measurement of 2 &amp;3 (Qs.31, 42):            top three rankings also converted into 4 point scale as below:</p> <p>Collectivist tendency scored higher:            score= 3 (Likert scale item - Strongly agree, ranked item - rank 1), score 2=(Likert scale item - agree, ranked item - rank 2), score 1=(Likert scale-some-what agree, ranked item - rank 3), score=0 (Likert scale item - rest of scales, ranked item - no choice)</p> <p>Individualist tendencies reverse scored accordingly</p>	<p>Mann Whitney U test was used to identify differences between English and Japanese language populations.</p>
<p><b>2. Attitude towards aggression</b></p>	<p><b>1. What aggression means to the owner: 17 items</b>            i. Pushing            ii. Spitting            iii. Swearing            iv. Arguing            v. Sarcasm</p>	<p>Measurement of 1-3 (Q. 44, 45, 48):            Ordinal scale (6 points Likert scale) – “Strongly Disagree” (score 1), through “Disagree” (2), “Somewhat Disagree” (3), “Somewhat Agree” (4), “Agree” (5) to “Strongly Agree” (6)</p>	<p>1-3: Principal component analysis (PCA)            4-5: Descriptive analysis            Mann Whitney U test was</p>



	<ul style="list-style-type: none"> <li>vi. Verbal threats</li> <li>vii. Shouting, screaming</li> <li>viii. Clenching a fist</li> <li>ix. Slamming a door</li> <li>x. Punching a wall</li> <li>xi. Pulling clothes or hair</li> <li>xii. Throwing objects</li> <li>xiii. An action that makes them annoyed, leaving mess, taking things away</li> <li>xiv. Failure to follow instruction</li> <li>xv. Ignoring the opinion of other people</li> <li>xvi. Spreading derogatory rumour</li> <li>xvii. Challenging another's opinion</li> </ul> <p><b>2. Opinion for using physical punishment or verbal correction or taking away privileges for a child: 11 items</b></p> <ul style="list-style-type: none"> <li>i. Physical punishment – (i.e. smack, hit) is sometimes important to stop/correct children's inappropriate behaviour</li> <li>ii. Physical punishment (i.e. smack, hit) is sometimes important to teach children what is wrong</li> <li>iii. Physical punishment is required when children do not listen to verbal correction</li> <li>iv. Physical punishment is required when children repeatedly do something wrong</li> <li>v. Physical punishment should never be used as it is a parents' responsibility to teach children that harming another is immoral</li> <li>vi. Physical punishment is sometimes important to teach children what is acceptable behaviour in society</li> <li>vii. Verbal correction (i.e. telling off) is important</li> </ul>		<p>used to assess Convergent validity between 2 different measurements (8 components from PCA and nominal variables)</p>
--	--	--	--

	<p>to stop/correct inappropriate behaviour by children</p> <p>viii. Verbal correction (i.e. telling off) should not be used as it is the parents' responsibility, to teach children that harming another is immoral</p> <p>ix. Verbal correction (i.e. telling off) should not be used as it is the parents' responsibility, to teach children that harming another is immoral</p> <p>x. It is better to teach children that something is wrong by taking away privileges than by using physical punishment</p> <p>xi. It is better to teach children that something is wrong by talking away privileges than using verbal correction</p> <p><b>3. Opinion for using physical punishment or verbal correction or taking away privileges for a dog.</b> The items used for children were simply adapted to "dog"</p> <p><b>4. Reaction to misbehaviour of a child</b></p> <p>i. Scold him / her</p> <p>ii. Smack him / her</p> <p>iii. Ignore him / her</p> <p>iv. Hit / kick him / her</p> <p>v. Give comfort to him / her</p> <p>vi. Shout / scream at him/ her</p> <p>vii. Do nothing, blame myself</p> <p>viii. Throw an object at him / her</p> <p>ix. Shut him /her out from the room</p> <p>x. Take away something he likes</p> <p>xi. Send him / her out to another room</p> <p>xii. Other _____</p>	<p>Measurement of 4 &amp;5: Nominal variables were classified into binary values associated with one of 2 groups:</p> <ul style="list-style-type: none"> <li>▪ Violent reactions (Score =1) <ul style="list-style-type: none"> <li>scold him/her, smack him / her, hit / kick him / her, throw an object at him / her and shout / scream at him/ her.</li> </ul> </li> <li>▪ Non- violent reactions (Score =0) <ul style="list-style-type: none"> <li>Ignore him / her, give comfort to him / her, do nothing / blame myself, shut him /her out from the room, take away something he likes, send him / her out to another room, and other. e. g. ask/talk to a child, explain to a child, redirect to other behaviour, no idea.</li> </ul> </li> </ul>	
--	---	---	--

	<p><b>5. Reaction to misbehaviour of a dog</b> The items used for children were simply adapted to “dog”</p>	<p>* The item “Other” was re-classified into either of the groups if an open answer was provided by the respondents.</p>	
<p><b>3. Attitude towards HDAB</b></p>	<p><b>1. Reaction to HDAB when walking on a lead (behaviour)</b></p> <ul style="list-style-type: none"> <li>i. I would do nothing</li> <li>ii. I would ignore the behaviour</li> <li>iii. I would pull the lead to control my dog</li> <li>iv. I would apologize to the person</li> <li>v. I would hold and cuddle my dog</li> <li>vi. I would use treats to control my dog</li> <li>vii. I would shout at / scold my dog</li> <li>viii. I would blame the victim for provoking my dog</li> <li>ix. I would be panicking and not be able to do anything</li> <li>x. I would try to take the dog away from the situation</li> <li>xi. I would physically intervene by smacking, holding the dog’s muzzle, physically manhandling my dog to force him/ her to behave</li> <li>xii. I do not know how I might react</li> <li>xiii. Other _____</li> </ul> <p><b>2. Reaction to HDAB when taking a toy away (behaviour)</b></p> <ul style="list-style-type: none"> <li>i. I would do nothing</li> <li>ii. I would ignore the behaviour</li> <li>iii. I would hold and cuddle my dog</li> <li>iv. I would walk away from the situation</li> <li>v. I would shout at / scold my dog</li> <li>vi. I would blame myself for provoking my dog</li> <li>vii. I would panic and be unable to do anything</li> <li>viii. I would try to take the dog away from the situation</li> </ul>	<p>Measurement of 1, 2 &amp; 5 (Q.42, 43, 31): top three ranking items were converted into a binary score with each of the top three scores (rank 1 – rank 3) = 1 All other responses = 0</p> <p>Measurement of 3 (Q. 36) single option was converted to a binary score with answered items = 1 and all other scores = 0.</p> <p>Measurement of 4 (Q. 40): 6 point Likert scale was converted into binary score with 6 (Strongly agree), 5 (agree), and 4 (partly agree) = 1 3 (partly disagree), 2 (disagree), and 1 (strongly disagree) = 0.</p>	<p>Hierarchical cluster analysis on the basis of a Jaccard measure of distance for binary variables (Finch, 2005)</p>

	<ul style="list-style-type: none"> <li>ix. I would physically intervene by smacking, holding the muzzle, physically manhandling my dog to force him/her to behave</li> <li>x. I do not know how I might react</li> <li>xi. Others _____</li> </ul> <p><b>2. What is the most appropriate course of action for dog bite (thinking)</b></p> <ul style="list-style-type: none"> <li>i. Punish the dog</li> <li>ii. Not do anything</li> <li>iii. Rehome the dog</li> <li>iv. Muzzle the dog</li> <li>v. Euthanize the dog</li> <li>vi. Avoid the situation</li> <li>vii. Ask a dog trainer for advice</li> <li>viii. Ask a behaviourist for advice</li> <li>ix. Leave the dog with a trainer to address the problem</li> <li>x. Research on the Internet for methods on how to handle the behaviour</li> <li>xi. Try to observe the dog carefully to recognize the signals before it displays the behaviour</li> <li>xii. Others _____</li> </ul> <p><b>4. Opinion on a dog displaying aggressive behaviour towards people (thinking) – used the following three statements:</b></p> <ul style="list-style-type: none"> <li>i. It is always the victim’s fault.</li> <li>ii. It is the owner’s fault in all situations</li> <li>iii. It is always the dog’s fault</li> </ul> <p><b>5. How owners feel when their dog starts displaying aggressive behaviour towards a person when they are walking on a lead (feeling)</b></p> <ul style="list-style-type: none"> <li>i. I would not want to stress my dog</li> <li>ii. I would be afraid that the person might complain</li> </ul>		
--	--	--	--

	<ul style="list-style-type: none"> <li>iii. I believe that such behaviour is natural to a dog</li> <li>iv. I would not want to cause irritation to other people</li> <li>v. I would feel embarrassed with other people around</li> <li>vi. I would not want to make my dog's behaviour worse</li> <li>vii. I would not want to be badly thought of by other people</li> <li>viii. I would believe that the victim had provoked this behaviour</li> <li>i. Others _____</li> </ul>		
<b>4. The value and role of dog</b>	<p><b>1. Important factors to choose a dog</b></p> <ul style="list-style-type: none"> <li>i. Breed type</li> <li>ii. Price</li> <li>iii. Size</li> <li>iv. Breed traits</li> <li>v. Gender</li> <li>vi. Colour</li> <li>vii. Temperament</li> <li>viii. Behaviour</li> <li>ix. Body odour</li> <li>x. Appearance</li> <li>xi. Quantity of exercise</li> <li>xii. Physical traits</li> <li>xiii. Good health</li> <li>xiv. Coat type (non-shedding coat)</li> <li>xv. Coat type (length of coat, wired/smooth)</li> <li>xvi. Quantity of grooming</li> <li>xvii. Other _____</li> </ul> <p><b>2. Daily activities with a dog</b></p> <ul style="list-style-type: none"> <li>i. Grooming</li> <li>ii. Feeding</li> <li>iii. Bathing</li> </ul>	<p>Measurement of 1 &amp; 3 (Q. 20, 32): multiple and single answers were converted into a binary score with answered items = 1 and all other scores = 0.</p> <p>Measurement of 2, 4 (Q. 21, 33): top three ranking were converted into a binary score with each of the top three scores (rank 1 – rank 3) = 1 All other responses = 0</p>	<p>Hierarchical cluster analysis on the basis of a Jaccard measure of distance for binary variables (Finch, 2005)</p>

	<ul style="list-style-type: none"> <li>iv. Taking part in obedience training classes</li> <li>v. Dressing my dog up</li> <li>vi. Sleeping together in bed</li> <li>vii. Visiting friends together</li> <li>viii. Going for a family day trip</li> <li>ix. Taking part in sport activities. E.g. agility, fly ball</li> <li>x. Walking my dog</li> <li>xi. Walking my dog in his/her stroller</li> <li>xii. Playing with toys together in the house</li> <li>xiii. Keeping me company when I drive to go shopping /other places</li> <li>xiv. Playing with toys together outside/ garden</li> <li>xv. Being close to each other (spending time in each other's company)</li> <li>xvi. Going to dog friendly places together i.e. café, dog run, hotel</li> <li>xvii. Other _____</li> </ul> <p><b>3. Relationship with a dog</b></p> <ul style="list-style-type: none"> <li>i. My pet</li> <li>ii. A guard</li> <li>iii. A friend</li> <li>iv. My partner</li> <li>v. A non-human family member</li> <li>vi. An adult member of the family</li> <li>vii. A baby /child member of the family</li> <li>viii. Working partnership (i.e. police dog, herding dog)</li> <li>ix. Assistance partnership</li> <li>x. Gundog/sporting dog</li> <li>xi. Other _____</li> </ul> <p><b>4. Advantage having a dog</b></p> <ul style="list-style-type: none"> <li>i. Relaxation</li> <li>ii. Leisure activities</li> </ul>		
--	--	--	--

	<ul style="list-style-type: none"> <li>iii. Companionship</li> <li>iv. Emotional enrichment</li> <li>v. A challenge and responsibility</li> <li>vi. Provides security and protection</li> <li>vii. Provides assistance</li> <li>viii. Prestige (something to be proud of)</li> <li>ix. Facilitates social interaction with others</li> <li>x. Encourages a healthy, active lifestyle</li> <li>xi. Helps to teach children responsibility and respect for animals</li> <li>xii. Other</li> </ul>		
<b>5. Type of information sought and Source of knowledge</b>	<ol style="list-style-type: none"> <li>1. Which information people regularly research</li> <li>2. Where people seek the information from</li> <li>3. Which information people seek before they gain a dog</li> </ol> <p>*The table for the items is described in Appendix Table 3.1,Q.37</p>	Measurement of 1 and 2 (Q. 37 & 19): 11 variables relating to Type of information and 10 variables to Source of knowledge were summed up separately. *"Not applicable" was excluded and "Other" was re-classified into one of the groups if an open answer was provided by the respondents that matched one of the predefined categories.	Hierarchical cluster analysis using Ward's method
<b>6. Handling experience</b>	<ol style="list-style-type: none"> <li>1. Have you had experience of dog training classes? <ul style="list-style-type: none"> <li>i. Yes ii. No</li> </ul> </li> <li>2. The level of owner's training experience <ul style="list-style-type: none"> <li>i. I am competent to attend to basic issues i.e. feeding, walking and toileting my dog</li> <li>ii. I am competent to train my dog to a basic level of obedience. i.e. sit, down, wait</li> <li>iii. I am competent to train my dog to a high level of obedience</li> <li>iv. I am competent to take part in local obedience competitions</li> <li>v. I am competent to take part in international competitions</li> </ul> </li> </ol>	Measurement of 1 (Q.22): 6 items were converted into 2 groups: High level of experience: iii, iv, v Basic level of experience: i, ii "Other" was re-classified into one of the groups if an open answer was provided by the respondents that matched one of the predefined categories.	Mann Whitney U test was used to identify differences between English and Japanese language populations

	vi. Other		
<b>7. Training methods</b>	<b>1. To resolve the problem of your dog (on a lead) lunging towards people while on a lead</b> i. Toys as a reward ii. Ignore the behaviour iii. Physically punish the dog iv. Scold the dog for disobedience v. Control the dog with a choke chain vi. Verbal praise for the desired behaviour vii. Scold the dog for inappropriate behaviour viii. Control the dog with a flat collar and lead ix. Treats as a reward (including clicker training the dog) x. Stroke the dog for the desired behaviour xi. Use an electric collar xii. Use sound / smell aversion collar xiii. Physically manipulate the dog into desired posture xiv. Others _____	Measurement of 1 (Q. 35-b): Binary score: Positive reinforcement = 1 i. Toys as a reward ii. Verbal praise for the desired behaviour iii. Treats as a reward iv. Stroke the dog for the desired behaviour Positive punishment = 0 i. Physically punish the dog Scold the dog for disobedience ii. Control the dog with a choke chain iii. Scold the dog for inappropriate behaviour iv. Control the dog with a flat collar and lead v. Use an electric collar vi. Use sound / smell aversion collar vii. Physically manipulate the dog into desired posture *The item “Ignore the behaviour” was removed as one of the negative punishment method. The item “Other” was re-classified into either of groups.	Mann Whitney U test was used to identify differences between English and Japanese language populations



### **3.3 Results**

#### 3.3.1. Demographics differences

All categories except “Gender”, “Numbers of under 12 year olds living in the household” and “Numbers of over 12 year olds living in the household” were significantly different between English and Japanese language speakers (both  $P < 0.0045$ , chi square test), as shown in Table 3.3.

Table 3 3. Frequency of 11 demographics between English and Japanese language respondents

\*Both the most popular category and significant p-values are in bold. (Bonferroni correction was applied so the new threshold is specified in the column).

	English language respondents		Japanese language respondents		df	Chi-square	P-value P<0.0045
	Frequency	Percent	Frequency	Percent			
<b>Nationality</b>					7	<b>1761.694</b>	<b>0.001</b>
British	162	14.1	0	0			
Italian	205	17.9	0	0			
Other European	192	16.8	0	0			
North American	<b>462</b>	<b>40.3</b>	0	0			
Oceanian	95	8.3	0	0			
Japanese	3	0.3	<b>631</b>	<b>99.8</b>			
Chinese	3	0.3	1	0.2			
Other nationalities	24	2.0	0	0			
<b>Total</b>	1146	100	632	100			
<b>Ethnic group</b>					9	<b>1582.193</b>	<b>0.001</b>
Caucasian	<b>1008</b>	<b>88.0</b>	9	1.4			
Native American/Indigenous	2	0.2	0	0			
Pacific Islander	0	0	3	0.5			
Latino/Hispanic	39	3.4	0	0			
Middle Eastern	2	0.2	0	0			
African	1	0.1	0	0			
Asian	20	1.7	<b>597</b>	<b>94.5</b>			
Caribbean	0	0	0	0			
Mixed multiple ethnic group	17	1	1	0.2			
Other	36	11	11	1.7			
Would rather not say	21	11	11	1.7			
<b>Total</b>	1146	100	632	100			
<b>Country of residence</b>					7	<b>1741.878</b>	<b>0.001</b>
United Kingdom	145	12.7	0	0			

Italy	201	17.5	1	0.2			
Other European countries	153	13.4	0	0			
North America (Except US)	80	7.0	0	0			
Oceania	109	9.5	0	0			
United states	<b>411</b>	<b>35.8</b>	3	0.5			
Japan	2	0.2	<b>624</b>	<b>98.7</b>			
Germany	23	2.0	2	0.3			
Zambia	0	0.0	2	0.3			
Other countries	22	1.9	0	0			
<b>Total</b>	1146	100	632	100			
<b>Gender</b>					1	<b>4.858</b>	0.028
Male	129	11.3	94	14.9			
Female	<b>1017</b>	<b>88.7</b>	<b>538</b>	<b>85.1</b>			
<b>Total</b>	1146	100	632	100			
<b>Age</b>					6	<b>86.978</b>	<b>0.001</b>
Under 19	20	1.7	10	1.6			
20-29	230	20.1	53	8.4			
30-39	<b>278</b>	<b>24.3</b>	113	17.9			
40-49	255	22.3	<b>236</b>	<b>37.3</b>			
50-59	251	21.9	177	28.0			
60-69	94	8.2	38	6.0			
Over 70	18	1.6	5	0.8			
<b>Total</b>	1146	100	632	100			
<b>Are lived</b>					3	<b>71.129</b>	<b>0.001</b>
Urban (a large town/city)	287	25.0	<b>266</b>	<b>42.3</b>			
Suburban (outskirts of a large town or city)	<b>361</b>	<b>31.5</b>	114	18.1			
Semi urban (a small town/village)	297	25.9	130	20.7			
Rural (all those people not included within an urban /semi urban/suburban area)	198	17.3	119	18.9			
Missing	3	0.3	3	0.5			

<b>Total</b>	1146	100	632	100			
<b>Type of home</b>					5	<i>113.857</i>	<b>0.001</b>
Detached house (house is within its own ground/garden)	<b>693</b>	<b>60.5</b>	<b>429</b>	<b>67.9</b>			
Semi-detached house (house is attached to the one next door)	125	10.9	14	2.2			
Terraced house (house in a row)	53	4.6	4	0.6			
Apartment/ Flat with a garden	78	6.8	15	2.4			
Apartment/ Flat without a garden	177	15.4	169	26.7			
Other	20	1.7	1	1			
<b>Total</b>	1146	100	632	100			
<b>Current work status</b>					9	<i>265.620</i>	<b>0.001</b>
Permanent paid employee	<b>437</b>	<b>38.1</b>	<b>203</b>	<b>32.1</b>			
Temporary paid employee	47	4.1	25	4.0			
Self employed	263	22.9	98	15.5			
Part time employed	92	8.0	103	16.3			
Unemployed	60	5.2	8	1.3			
Retired employee	77	6.7	5	0.8			
Full-time home-maker	34	3.0	134	21.2			
Full- time Student	86	7.5	18	2.8			
Part-time student	19	1.7	1	0.2			
Other	31	2.7	37	5.9			
<b>Total</b>	1146	100	632	100			
<b>Household structure</b>					5	<i>53.798</i>	<b>0.001</b>
Living with an adult partner in a long term relationship e.g. married	<b>697</b>	<b>60.8</b>	<b>385</b>	<b>60.9</b>			
Living without an adult partner	274	23.9	86	13.6			
Living with parents / guardian etc.	116	10.1	125	19.8			
Living in a commune	6	0.5	8	1.3			
Other	39	3.4	24	3.8			

Would rather not say	14	1.2	4	0.6			
<b>Total</b>	1146	100	632	100			
<b>Numbers of under 12 year olds living in the household</b>					4	<b>3.398</b>	0.494
None	<b>1031</b>	<b>90.0</b>	<b>558</b>	<b>89.9</b>			
One	81	7.1	42	6.6			
Two	27	2.4	24	3.0			
Three	5	0.4	4	0.5			
Four or more	2	2	1	0.2			
<b>Total</b>	1146	100	632	100			
<b>Numbers of over 12 years old live in the household</b>					4	<b>1.754</b>	0.781
None	<b>1020</b>	<b>89.0</b>	<b>568</b>	<b>89.9</b>			
One	76	6.6	42	6.6			
Two	40	3.5	19	3.0			
Three	8	0.7	3	0.5			
Four or more	2	0.2	0	0.0			
<b>Total</b>	1146	100	632	100			

### 3.3.2. Collectivism and Individualism

In the distribution of the total score of collectivism, Japanese language respondents showed higher score than English language respondents (Table 3. 4)

There was a significant difference between English and Japanese language respondents for all four items relating to collectivism where Japanese language respondents had higher scores than English language respondents. However, there was not a significant difference between English and Japanese language respondents for two items relating to individualism (Table 3.5).

Table 3 4. The distribution frequency of total score of collectivism in English and Japanese language respondents  
\*LR=language respondents

<b>Populations</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
English LR Collectivism total	1146	6.4773	2.49574
Japanese LR Collectivism total	632	10.1377	2.82086

Table 3 5. Summary table for four items which may be related to “Collectivism and Individualism” in English and Japanese Language respondents  
P-values below the corrected threshold using Bonferroni method (0.0125) are in bold. ELR=English language respondents, JLR=Japanese language respondents

Measurements items of collectivism and individualism	Prediction	Results			
		Mean rank		U-value	P-value
		ELR	JLR		
<b>Item 1: Likert scale</b>					
<b>Opinion on a dog displaying aggressive behaviour towards people</b>					
• It is the owner's fault in all situations	Collectivism tendency	709.55	<b>1215.81</b>	155909.000	<b>0.001</b>
• It should have strong legally enforceable penalties	Collectivism tendency	732.68	<b>1173.85</b>	182425.000	<b>0.001</b>
<b>Item 2: Ranked 1-3</b>					
<b>The main thoughts owners have when their dog shows aggressive behaviour in public</b>					
• I would not want to cause irritation to other people	Collectivism tendency	715.84	<b>1204.40</b>	163117.000	<b>0.001</b>
• I would not want to stress my dog	Individualism tendency	<b>907.79</b>	856.34	341179.000	0.031
<b>Item 3: Ranked 1-3 (selected 2 items)</b>					
<b>Owners reaction when their dog shows aggressive behaviour in public</b>					
• I would apologize to the person	Collectivism tendency	762	<b>1119.61</b>	216705.500	<b>0.001</b>
• I would blame the victim for provoking my dog	Individualism tendency	<b>890.81</b>	887.12	360632.000	0.375
<b>Item 4: Likert scale</b>					
Opinion on the role of dog obedience training for dog owners					
Obedience training for a dog is important for owners to teach their dogs the rules about how to behave with other people and dogs	Collectivism tendency	849.65	<b>961.76</b>	316465.500	<b>0.001</b>

### 3.3.3. Attitude towards aggression

#### 3.3.3.1. What aggression means to the owner

The PCA indicated a 2 factor solution which explained 66% of the total variance (Table 3. 8, Appendix Table 3.6), with no cross-loading between factors when a threshold loading of 0.5 was used.

Ten items that were grouped into component 1 (Table 3.6) explained nearly 50% of the variance (Table 3. 8) and seemed to relate to ‘physical contact and loud expressions’ of aggressive behaviour. Eight items loaded on component 2 (Table 3.6) explained 16% of total variance (Table 3. 8) and seemed to relate to ‘verbal or indirect expressions’ of aggressive behaviour.

Table 3 6. Results of principal component analysis of 1776 respondents of both English and Japanese languages. Survey related to what constitutes aggression to the individual.

Items	Component	
	1	2
Hitting	<b>.836</b>	.001
Pulling clothes or hair	<b>.821</b>	.133
Throwing objects	<b>.816</b>	.164
Spitting	<b>.806</b>	.116
Pushing	<b>.761</b>	.099
Verbal threats	<b>.717</b>	.303
Shouting, screaming	<b>.705</b>	.412
Clenching a fist	<b>.673</b>	.320
Punching a wall	<b>.647</b>	.377
Swearing	<b>.586</b>	.527
Failure to follow instruction	.058	<b>.887</b>
Ignoring the opinion of other people	.067	<b>.880</b>
Challenging another’s opinion	.047	<b>.867</b>
Sarcasm	.240	<b>.812</b>
An action that makes them annoyed	.282	<b>.779</b>
Arguing	.307	<b>.685</b>
Slamming a door	.494	<b>.627</b>
Spreading derogatory rumor	.421	<b>.595</b>



### 3.3.3.2. Opinion on using physical punishment, verbal corrections and taking away privileges for children

The PCA indicated a 3 factor solution that explained 74% of the total variance (Table 3. 8, Appendix Table 3.7). The first principal component was composed of six items that explained 44% of the variance (Tables 3.8) and seemed to relate to ‘physical punishment for children’. The second principal component had four items that explained 19% of the variance and seemed to relate to ‘verbal correction for children’ while two items that loaded on component 3 explained 10% of the variance and seemed to relate to ‘taking away something important for children’ (Tables 3.7).

Table 3 7. Results of principal component analysis of 1776 respondents in both English and Japanese languages. Survey related to using physical punishment or verbal correction or taking away privileges for children.

Items	Component		
	1	2	3
1. Physical punishment is sometimes important to teach children what is wrong	<b>.906</b>	.143	-.106
2. Physical punishment is required when children do not listen to verbal correction	<b>.893</b>	.142	-.078
3. Physical punishment is required when children repeatedly do something wrong	<b>.888</b>	.152	-.080
4. Physical punishment is sometimes important to stop/ correct inappropriate behaviour by children	<b>.873</b>	.155	-.097
5. Physical punishment is sometimes important to teach children what is acceptable behaviour in society	<b>.816</b>	.177	-.074
6. Physical punishment should never be used as it is a parent’s responsibility to teach children that harming another is immoral.	<b>-.729</b>	-.126	.213
7. Verbal correction is important to teach children what is wrong	.137	<b>.893</b>	.120
8. Verbal correction is important to stop/ correct inappropriate behaviour by children	.190	<b>.829</b>	.078
9. Verbal correction is always important to teach children what is acceptable behaviour in society	.206	<b>.800</b>	.069
10. Verbal correction should not be used as it is the parents responsibility, to teach children that harming another is immoral	-.088	<b>-.656</b>	.212
11. It is better to teach children that something is wrong by taking away privileges than using verbal correction	-.082	-.117	<b>.902</b>
12. It is better to teach children that something is wrong by taking away privileges than by using physical punishment.	-.287	.217	<b>.788</b>

Table 3 8. Summary of the results of principal component analysis of three questions related to attitude towards aggression. First column states the survey question name; second column cites how many principal components were extracted and the variance explained; third column describes the interpretation of each principal component.

<b>Measurement items of attitude towards aggression</b>	<b>Individual variance</b>	<b>Principal components</b>
<b>1: What aggression means to the respondent</b>	1. 49.660 2. 15.924	1. Physical contact and loud expressions 2. Verbal or indirect expressions
<b>2: Opinion on using physical punishment, verbal correction and taking away privileges for children</b>	1. 44.185 2. 19.439 3. 10.546	1. physical punishment for children 2. verbal correction for children 3. taking away something important for children
<b>3: Opinion on using physical punishment, verbal correction and taking away privileges for dogs</b>	1. 46.028 2. 18.547 3. 12.731	1. physical punishment for dogs 2. verbal correction for dogs 3. taking away something important for dogs

### 3.3.3.3. Opinion for using physical punishment or verbal correction or taking away privileges for dogs

The PCA indicated 3 factor solution explaining 77% of the total variance (Table 3. 8, Appendix Table 3. 8). Six items that loaded on component 1 explained 46% of the variance (Table 3.9) and seemed to relate to ‘physical punishment for dogs’, four items loaded on component 2 (Table 3.9) and explained 19% of the variance and seemed to relate to ‘verbal correction for dogs’ and two items that loaded on component 3 explained 13% of the variance seemed to relate to ‘taking away something important for dogs’.

Table 3 9. Results of principal component analysis of 1776 respondents in both English and Japanese languages. Survey related to the Opinion for using physical punishment or verbal correction or taking away privileges for dogs

Items	Component		
	1	2	3
1. Physical punishment is sometimes important to teach dogs what a rule is	<b>.913</b>	.162	-.081
2. Physical punishment is required when dogs repeatedly do something wrong	<b>.885</b>	.127	-.054
3. Physical punishment is required when dogs do not obey a command	<b>.875</b>	.075	-.076
4. Physical punishment is sometimes important to stop/ correct inappropriate behaviour by dogs	<b>.849</b>	.249	-.099
5. Physical punishment is sometimes important to teach dogs what is a rule in their life	<b>.825</b>	.227	-.071
6. Physical punishment should never be used to teach dogs that something is wrong	<b>-.653</b>	-.182	.222
7. Verbal correction is important to teach dogs what is wrong	.183	<b>.911</b>	.018
8. Verbal correction is important to teach dogs what a rule is	.204	<b>.864</b>	-.027
9. Verbal correction is important to stop/ correct inappropriate behaviour by dogs	.219	<b>.861</b>	.031
10. Verbal correction should not be used to teach dogs that something is wrong	-.114	<b>-.782</b>	.150
11. It is better to teach dogs that something is wrong by taking away privileges than using verbal correction	-.107	-.152	<b>.907</b>
12. It is better to teach dogs that something is wrong by taking away privileges than using physical punishment	-.179	.073	<b>.899</b>

From the three PCAs eight components were taken forward for the further investigation (Chapter 4):

1. Physical contact and loud expressions
2. Verbal or indirect expressions
3. Using physical punishment for children
4. Using verbal correction for children
5. Using taking away something important for children
6. Using physical punishment for dogs
7. Using verbal correction for dogs
8. Using taking away something important for dogs

There were significant differences for the components: “Using physical contact and loud expressions” and “Using verbal or indirect expression”, between English and Japanese language respondents. Japanese language respondents showed significant higher for those components than English language respondents.

In the result for attitude toward children between English and Japanese language respondents, there were significant differences between them for respondents’ total score of 2 components: “Using physical punishment” and “Using taking away something important” (Table 3.10). Japanese language respondents indicated significantly higher for the component: “Using physical punishment” than English language respondents. On the other hand, English language respondents showed significantly higher for the component: “Using taking away something important” than Japanese language respondents. The same results were appeared in dogs between English and Japanese language respondents.

Table 3 10. Results of Mann-Whitney U test between English and Japanese language respondents regarding each respondent' total score of attitude towards children and dogs for 8 PCA components based on average rank score and *U* statistic, z-score and p-value. \*LR=language respondents (Bonferroni correction was applied so the new threshold is specified in the column).

	<b>Mann-Whitney U</b>	<b>Wilcoxon W</b>	<b>Z</b>	<b>Asymp. Sig. (2-tailed) After correction p=0.00625</b>	<b>Two language populations</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Using physical contact and loud expressions	213806.500	833747.500	-12.391	<b>.001</b>	English LR	1113	749.10	833747.50
					Japanese LR	602	1059.34	637722.50
					Total	1715		
Using verbal or indirect expressions	118674.000	738615.000	-22.238	<b>.001</b>	English LR	1113	663.63	738615.00
					Japanese LR	606	1220.67	739725.00
					Total	1719		
Using physical punishment for children	174137.000	794078.000	-16.659	<b>.001</b>	English LR	1113	713.46	794078.00
					Japanese LR	606	1129.15	684262.00
					Total	1719		
Using verbal correction for children	337031.500	956972.500	-.021	.983	English LR	1113	859.81	956972.50
					Japanese LR	606	860.34	521367.50
					Total	1719		
Using taking away something important from children	99848.500	283769.500	-24.344	<b>.001</b>	English LR	1113	1073.29	1194570.50
					Japanese LR	606	468.27	283769.50
					Total	1719		
Using physical punishment for dogs	207639.000	827580.000	-13.290	<b>.001</b>	English LR	1113	743.56	827580.00
					Japanese LR	606	1073.86	650760.00
					Total	1719		
Using verbal correction for dogs	337031.500	956972.500	-.021	.983	English LR	1113	859.81	956972.50
					Japanese LR	606	860.34	521367.50
					Total	1719		
Using taking away something important from dogs	199213.500	383134.500	-14.126	<b>.001</b>	English LR	1014	984.01	938794.00
					Japanese LR	705	632.24	539546.00
					Total	1719		

### 3.3.3.4. Reaction to misbehaviour of a child and dog

For English language respondents the proportion of individuals favouring non-violent reactions was much higher than those classified as using violent reactions for both a child and a dog (Table 3.11).

By contrast, among Japanese language respondents, the violent reaction group was slightly higher than the group of non-violent reactions for a child. However, the group of non-violent reactions was much higher than the group of violent reactions for a dog. This suggests that Japanese dog owners may express different attitudes towards the use of violence on a child compared to a dog, finding it more acceptable with people.

Table 3.11. The distribution of the frequency for violent and non-violent group between English and Japanese language respondents for the item “Reaction if your child and dog did something wrong” and the result of Chi-square test.

Group	N	Child		Dog		df	Asymp. Sig. (2-sided)
		Violent reactions	Non-violent reactions	Violent reactions	Non-violent reactions		
English LR	1146	373	<b>773</b>	<b>374</b>	772	1	.001
Japanese LR	632	<b>332</b>	300	240	<b>392</b>	1	.001

### 3.3.3.5. The difference between two groups: violent reactions and non-violent reactions group for each of the 8 components from PCA

There were significant difference between the “violent reactions” and “non-violent reactions” groups for all 8 components relating to children (Table 3.12). However, regarding dogs, only 6 principal components differed significantly between these two groups, with no difference between the two groups in ‘physical contact and loud expressions’ and ‘verbal or indirect expressions’ (Table 3.13).

Table 3 12. Results of Mann-Whitney U test between the “non-violent” and “violent” groups’ regarding attitude towards children for 8 PCA components for both English and Japanese language populations based on average rank score and *U* statistic. z-score and p-value (Bonferroni correction was applied so the new threshold is specified in the column)

	<b>Mann-Whitney U</b>	<b>Wilcoxon W</b>	<b>Z</b>	<b>Asymp. Sig. (2-tailed) After correction p=0.0062</b>	<b>Groups of reactions for attitude towards child</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Using physical contact and loud expressions	327126.500	837681.500	-2.866	<b>.004</b>	Non-violent	1010	829.39	837681.50
					Violent	705	<b>898.99</b>	633788.50
					Total	1715		
Using verbal or indirect expressions	304514.000	819119.000	-5.230	<b>.001</b>	Non-violent	1014	807.81	819119.00
					Violent	705	<b>935.07</b>	659221.00
					Total	1719		
Using physical punishment for children	203029.000	717634.000	-15.283	<b>.001</b>	Non-violent	1014	707.73	717634.00
					Violent	705	<b>1079.02</b>	760706.00
					Total	1719		
Using verbal correction for children	241001.000	755606.000	-11.576	<b>.001</b>	Non-violent	1014	745.17	755606.00
					Violent	705	<b>1025.15</b>	722734.00
					Total	1719		
Using taking away something important from children	273328.500	522193.500	-8.378	<b>.001</b>	Non-violent	1014	<b>942.95</b>	956146.50
					Violent	705	740.70	522193.50
					Total	1719		
Using physical punishment for dogs	230902.000	745507.000	-12.603	<b>.001</b>	Non-violent	1014	735.21	745507.00
					Violent	705	<b>1039.48</b>	732833.00
					Total	1719		
Using verbal correction for dogs	229607.500	744212.500	-12.700	<b>.001</b>	Non-violent	1014	733.94	744212.50
					Violent	705	<b>1041.32</b>	734127.50
					Total	1719		
Using taking away something important from dogs	290681.000	539546.000	-6.636	<b>.001</b>	Non-violent	1014	<b>925.83</b>	938794.00
					Violent	705	765.31	539546.00
					Total	1719		

Table 3 13. Results of Mann-Whitney U test between the “non-violent” and “violent” groups’ regarding attitude towards dogs for 8 PCA components based on for both English and Japanese language populations average rank score and *U* statistic, z-score and p-value (Bonferroni correction was applied so the new threshold is specified in the column)

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed) After correction p=0.0062	Groups of reactions for attitude towards a dog	N	Mean Rank	Sum of Ranks
Using physical contact and loud expressions	336197.500	941747.500	-.153	.878	Non-violent	1100	856.13	941747.50
					Violent	614	<b>859.95</b>	528007.50
					Total	1714		
Using verbal or indirect expressions	322679.500	932639.500	-1.650	.099	Non-violent	1104	844.78	932639.50
					Violent	614	<b>885.96</b>	543981.50
					Total	1718		
Using physical punishment for children	235388.000	845348.000	-10.552	<b>.001</b>	Non-violent	1104	765.71	845348.00
					Violent	614	<b>1028.13</b>	631273.00
					Total	1718		
Using verbal correction for children	180694.500	790654.500	-16.149	<b>.001</b>	Non-violent	1104	716.17	790654.50
					Violent	614	<b>1117.21</b>	685966.50
					Total	1718		
Using taking away something important from children	292786.500	481591.500	-4.721	<b>.001</b>	Non-violent	1104	<b>901.29</b>	995029.50
					Violent	614	784.35	481591.50
					Total	1718		
Using physical punishment for dogs	195783.000	805743.000	-14.646	<b>.001</b>	Non-violent	1104	729.84	805743.00
					Violent	614	<b>1092.64</b>	670878.00
					Total	1718		
Using verbal correction for dogs	180694.500	790654.500	-16.149	<b>.001</b>	Non-violent	1104	716.17	790654.50
					Violent	614	<b>1117.21</b>	685966.50
					Total	1718		
Using taking away something important from dogs	273683.500	462488.500	-6.663	<b>.001</b>	Non-violent	1104	<b>918.60</b>	1014132.50
					Violent	614	753.24	462488.50
					Total	1718		



#### 3.3.4. Attitude towards HDAB

After hierarchical cluster analysis (HCA), only the first 15 variables out of the total of 46 variables for English language respondents were considered for retention as these made up the most clearly defined clusters and were grouped into 3 clusters (Figure 3.2). The first cluster had 9 variables which consisted of attitudes directed towards “not making matters worse and trying to move away from the situation”, while cluster 2 had 4 variable related to ‘Concerned what to do’. The last cluster had 2 variables relating to “acknowledging an owner’s responsibility, but do not know what to do”. Other included e.g., I know I have to do something, but I do not know what to do or cannot to do anything, freeze.

16 variables out of the total of 46 variables for Japanese language respondents were selected as the same way as the English language respondents. Similar to the English respondents, The first cluster had 14 variables which related to “not making matter worse and trying to move away from the situation”, but this was combined with acknowledging owner responsibility, but not knowing what to do, while cluster 2 had 2 variables which related to ‘physically intervening, e.g., cuddle, hold muzzle /body’ (Figure 3.3). The results from the reliability analysis of the structure of both language sets using a HCA on the divided data sets for both the English language (Appendix, Figure 3.4, 3.5) and Japanese language respondents (Appendix, Figure 3.6, 3.7) looked similar in structure for each population. Eight common variables were extracted from the defined clusters of both English and Japanese language respondents: apologize, do not want to make the behaviour worse, walking with a dog in public – taking a dog away, RT (reaction): walking a dog away, do not want to stress my dog, do not want to cause irritation to other people, opinion for dog bite-owner, RT: do not know. A few other variables were also extracted within the groups between English and Japanese language respondents. In English language respondents, ‘ask behaviourist’ and ‘shout and scold’ were present, in Japanese speakers, ‘nothing (the item - Walking with a dog in public)’, ‘Ignore (the items - Walking with a dog in public and taking a toy away from a dog)’, ‘Observe’ ‘Physically intervene’ and ‘Hold and cuddle’ were present.

These 8 common items were used in a new cluster analysis for the two populations together and revealed 2 clusters (Figure, 3.4). The first cluster had 7 variables, which appear to relate to ‘not making matter worse and trying to move away from it’. The second cluster had 4 variables that appear to relate to ‘do not know what to do’.

Figure 3. 2.Dendrogram showing English language respondents for the grouping of 46 variables (1-0 binary score) for Q 1, 2, 3, 4 and 5 (attitude towards HDAB) RW=reaction for HDAB when walking a dog on lead in public, RT=reaction for HDAB taking a toy away from the dog

15 Cluster variables: 4=RW apologize, 42= Feeling for public when dog shows HDAB when walking a dog on lead in public do not make a behaviour worse, 10=RW take a dog away, 17=RT walk away, 38= Feeling for public when dog shows HDAB when walking a dog on lead in public: other do not want to stress a dog, 30=ask behaviourist, 18=RT shout and scold at dog, 8=RW blame the victim, 24=RT other, 7= RW shout and scold at dog, 23=RT do not know how to react, 40= Feeling for public when dog shows HDAB when walking a dog on lead in public: do not cause irritation to other people, 36= opinion for HDAB: owner's fault, 13=RW other, 46=Feeling for public when dog shows HDAB when waking a dog on lead in public: other

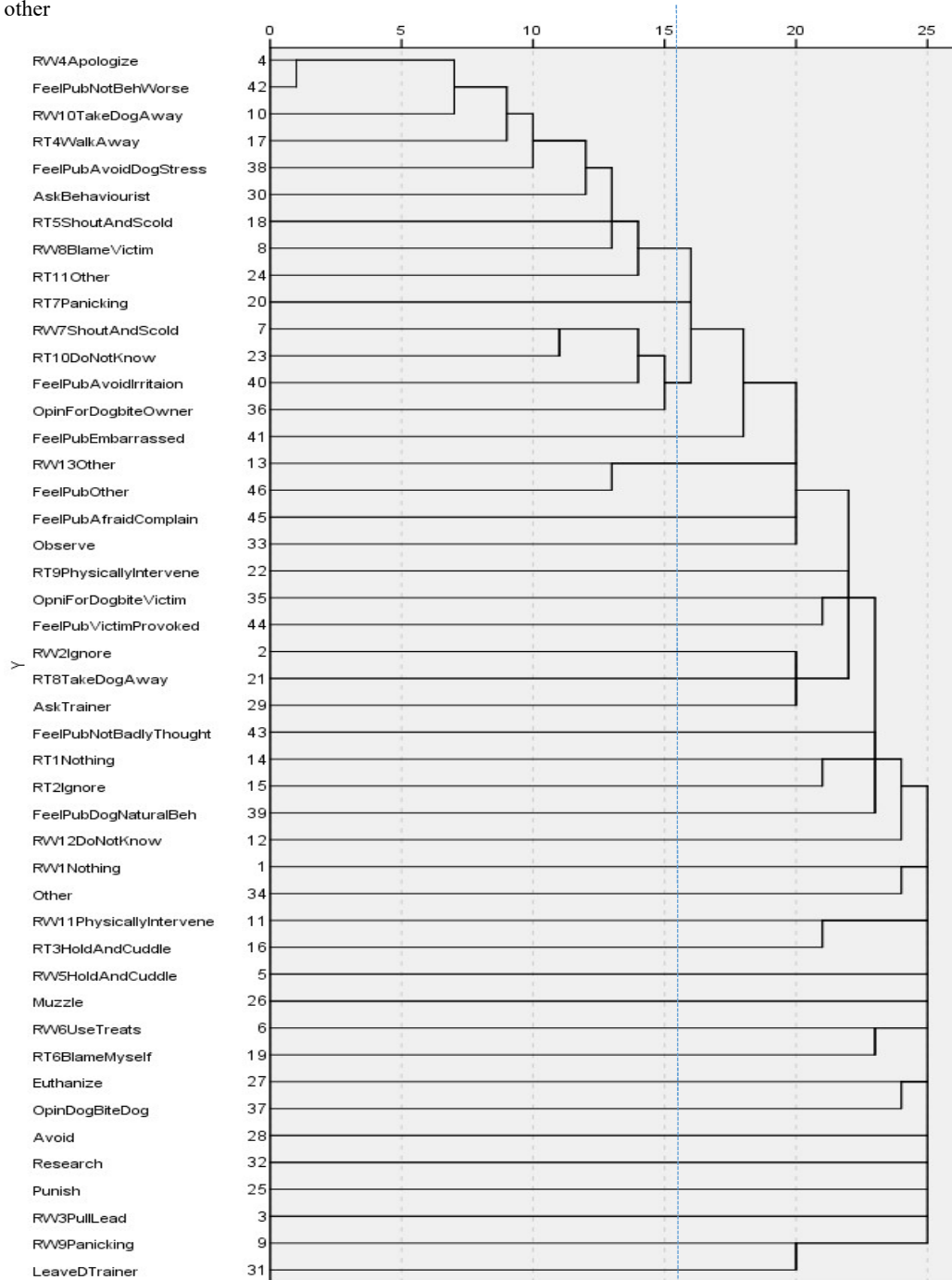


Figure 3. 3. Dendrogram showing Japanese language respondents for the grouping of 48 variables (1-0 binary score) for Q 1, 2, 3, 4 and 5 (attitude towards HDAB) RW=reaction for walking a dog on lead in public, RT=reaction for taking a toy away from the dog

16 Cluster variables: 40= Feeling for public when dog shows HDAB when walking a dog on lead in public: do not cause irritation to other people, 42= Feeling for public when dog shows HDAB when waking a dog on lead in public do not make a behaviour worse, 36= opinion for HDAB: owner's fault, 1=RW nothing, 4=RW apologize, 10=RW take a dog away, 23=RT do not know how to react, 38= Feeling for public when-dog shows HDAB when walking a dog on lead in public: other do not want to stress a dog, 20=RT panicking, 15=RT ignore, 17=RT walk away, 33=observe, 2=RW, ignore, 21=RT take a dog away, 11=RW physical intervene, 16=RT cuddle and hold a dog

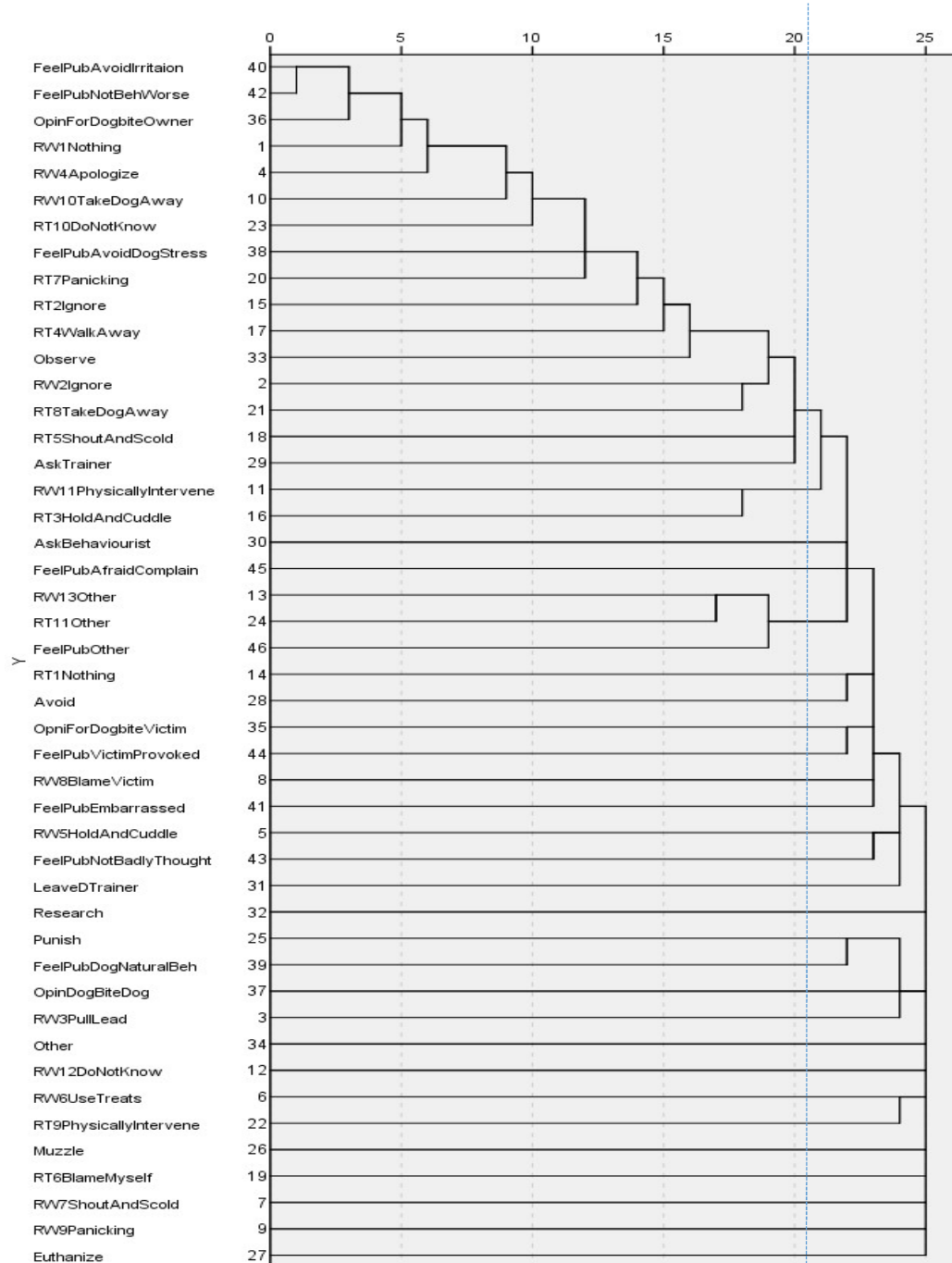
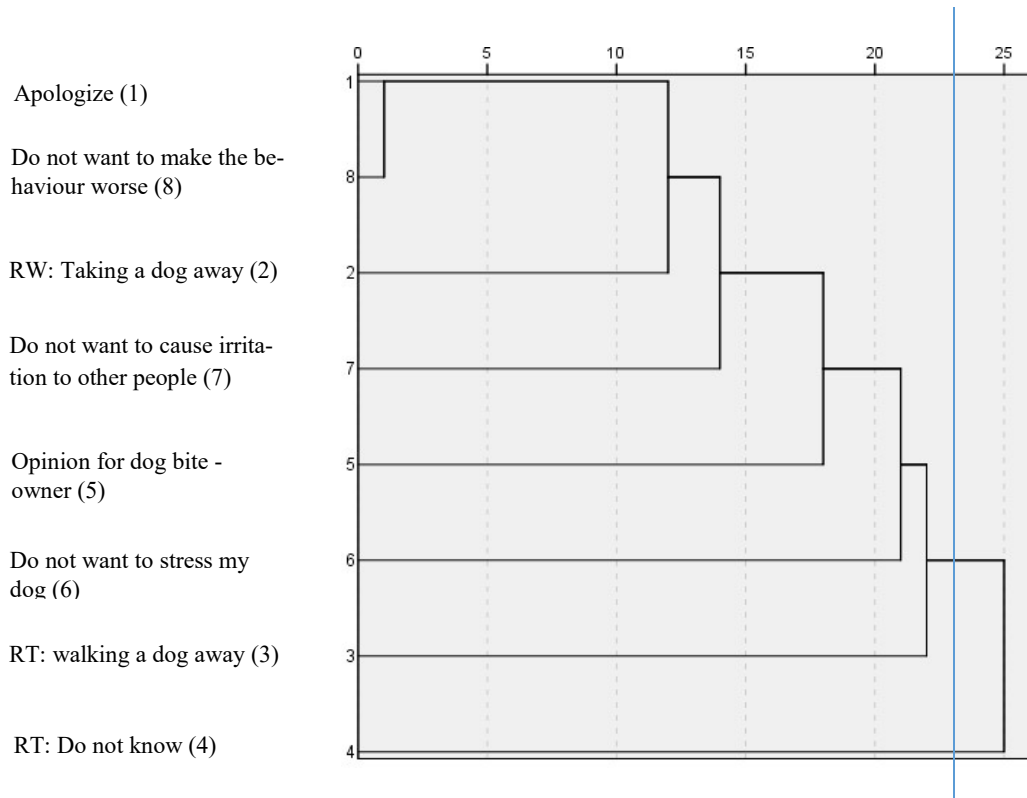


Figure 3. 4. Dendrogram showing the grouping of 8 common variables (1-0 binary score) selected from the combined English and Japanese language HCA for Attitude towards HDAB  
 RW=Reaction for walking with a dog in public RT=Reaction for taking a toy away



### 3.3.5. The role and value of dogs

The highest score of the relationship with dogs was “Non-human family member” both in English (N=603, 52.6%) and Japanese (N=308, 48.75) language respondents (Appendix Table 3.9). However, Japanese owners showed “a baby / child member of the family” was the second (N=137, 21.7%) while “My pet” was the second (N=172, 15%) in English language respondents. The total score of the top 3 for the owners’ expectation were ranked in English language respondents (Appendix Table 3.10): 1. Companionship (N= 1,521), 2. Emotional enrichment (N=1,406), 3. Encourages a healthy and active lifestyle (N=1,306), Japanese respondents (Appendix Table 3.11): 1. Relaxation (N=873), 2. Emotional enrichment (N=813), 3. Encourages a healthy and active lifestyle (N=648). The total score of the top 3 for how spend time with dogs (except the item “feeding” as a common ownership) resulted in English language respondents (Appendix Table 3.12): 1. Walking with my dog (N=1,403), 2. Being close to each other (N=1,287), 3. Playing with toys together in the house (N=679), Japanese respondents (Appendix Table 3.13):

1. Walking with my dog (N=937), 2. Being close to each other (N=572). 3. Sleeping together in bed (N=427).

For the cluster analysis, 12 out of the 57 variables in this section clustered for English language respondents (Figure 3.5). The single cluster which appeared seemed to relate to 'the physical and psychological support provided'. By contrast, 16 variables clustered out of 55 variables among the Japanese language respondents, and were grouped into 2 clusters (Figure 3.6). The first cluster had 12 variables which seemed similar in many respects to the English cluster, while the second cluster had 4 clusters which appeared to relate to 'physical and behavioural characteristics for selection'. The reliability of the structure of both language sets (Appendix, Figures 3.8, 3.9, 3.10 and 3.11) was good. Eleven common items were extracted from the two datasets for further cluster analysis, i.e., advantage having a dog: emotional enrichment, encourages our health, other, e.g., can do something together, do not feel lonely, spending time with a dog: walking with dog, being close, relationship with dog: a non-human family member, important factor in choosing a dog: breed traits, breed type, temperament, behaviour, good health. This revealed a 3 cluster structure (Figure, 3.7). The first cluster had 2 variables, which appear to relate to a 'healthy lifestyle', e.g., happiness, health benefit together, fun, saving life. The second cluster had 4 variables that appear to relate to 'being a non-human family member who provides physical and psychological support'. The third cluster had 5 variables which appear to relate to 'characteristics for selection'.

Figure 3. 5. Dendrogram showing English language respondents for the grouping of 57 variables (1-0 binary score) for The role / value of a dog. ADV=advantage having a dog, ImFacCho= important factor in choosing a dog, ST=spend time, Rel=relationship

12 cluster variables: 56=ADV: encourage our health, 57=ADV: other, 7= ImFacCho:temprament, 8= ImFacCho: behaviour, 25=ST: being close each other, 47=ADV=companionship, 48=ADV: emotional enrichment, 33=ST: walking with a dog, 39=Rel: non-human family member, 1= ImFacCho: breed type, 4= ImFacCho:breed traits, 13= ImFacCho:health, 3= ImFacCho:size.

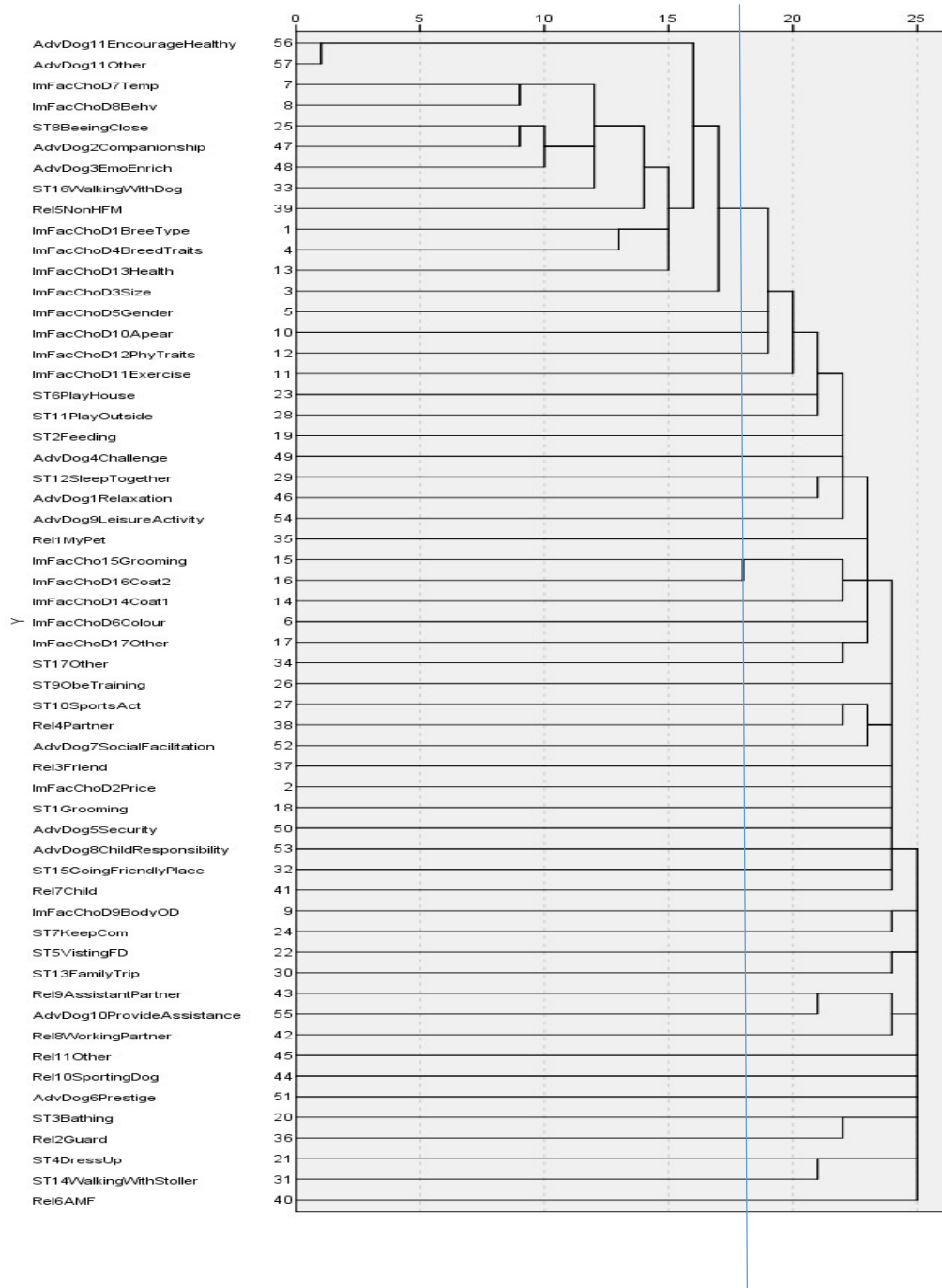


Figure 3. 6. Dendrogram showing Japanese language respondents for the grouping of 55 variables (1-0 binary score) for “The role / value of a dog” . ADV=advantage, ImFacCho= important factor in choosing a dog, ST=spend time, Rel=relationship

16 cluster variables: 54=ADV: encourage a healthy, 55=ADV: other, 3= ImFacCho:size, 10=ImFacCho:appearance, 32=ST: walking with a dog, 46=ADV: emotional enrichment, 44=ADV:relaxation, 1= ImFacCho: breed type, 25=ST: being close each other, 38=Rel: non-human family member, 19=ST; feeding, 5= ImFacCho:gender, 4= ImFacCho:breed traits, 7= ImFacCho:temperament, 13= ImFacCho:health, 8= ImFacCho: behaviour

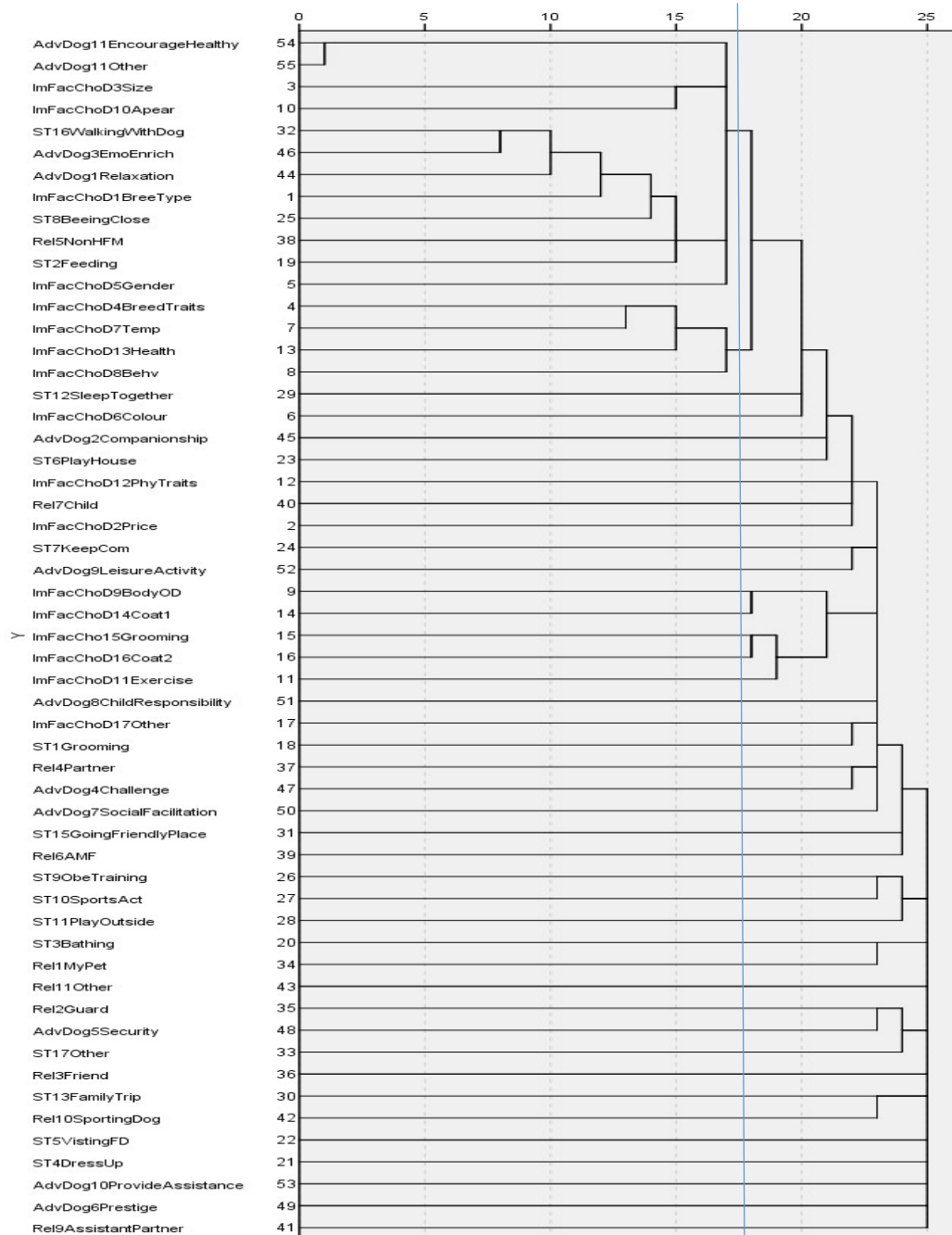
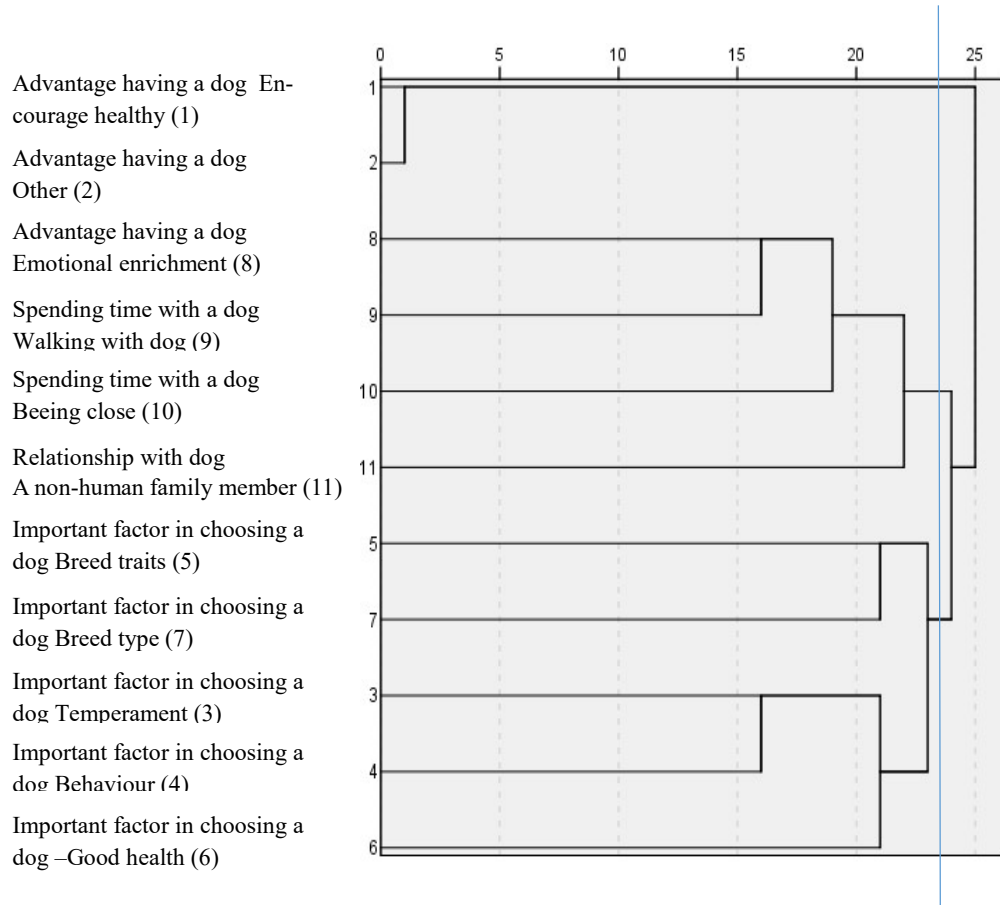


Figure 3. 7. Dendrogram showing the grouping of 11 common variables (1-0 binary score) which were selected from the defined cluster within English and Japanese language participants for the role / value of a dog



### 3.3.6. Type of information sought and source of knowledge

#### 3.3.6.1. Type of information sought

The HCA structured the 11 variables for English language respondents into 2 clusters (Figure 3.8). The first cluster had 9 variables which appear to relate to ‘Practical care’ and the other 2 to “breed and training information”.

The total of 11 variables for Japanese language respondents were grouped into 3 distinct clusters. The first cluster had 5 variables which appear to relate to “anticipated issues”, the second (5 items) to ‘Practical care’ and the third cluster (1 item) to ‘breed’ (Figure 3.9).

In order to determine clustering for both populations, all 11 variables were used in a new cluster analysis and 3 cluster structure: the first cluster had 5 variables which appear to



“Practical care”. The second cluster had 4 clusters that appear to “How to care” and the third cluster had 2 variables which appear to “What dogs is like”. (Figure, 3.10).

Figure 3. 8. Dendrogram showing the grouping of 11 variables which were selected from the distinct cluster of English language respondents for type of information sought

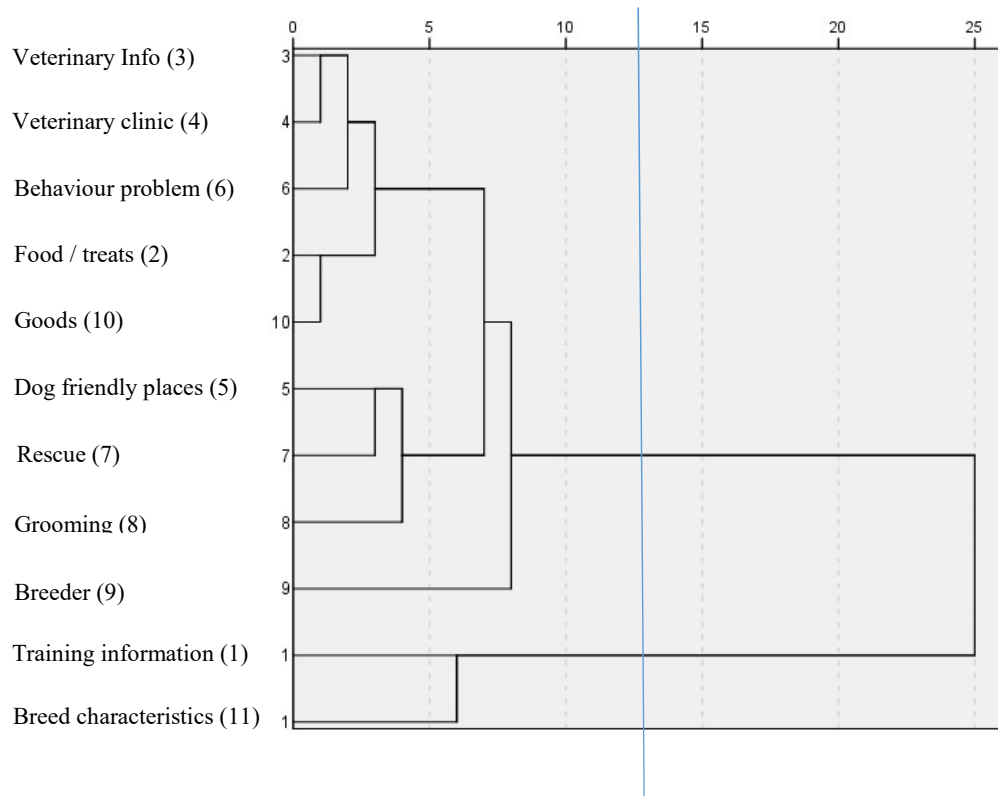


Figure 3. 9. Dendrogram showing the grouping of 11 variables which were selected from the distinct cluster of Japanese language respondents for type of information sought

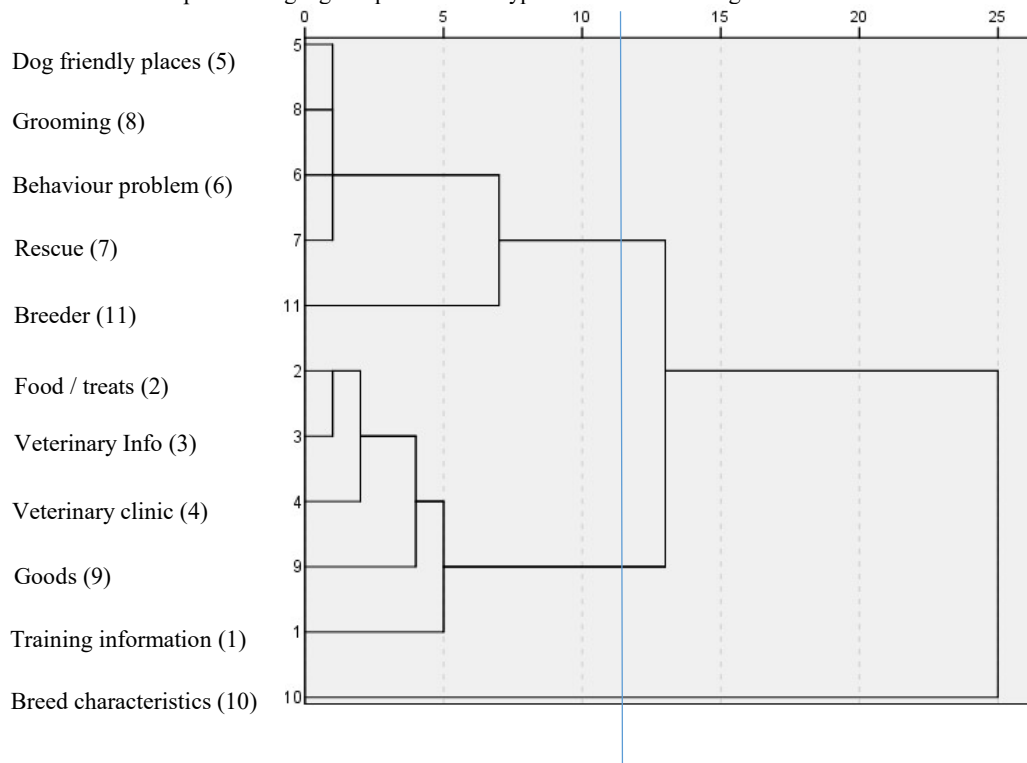
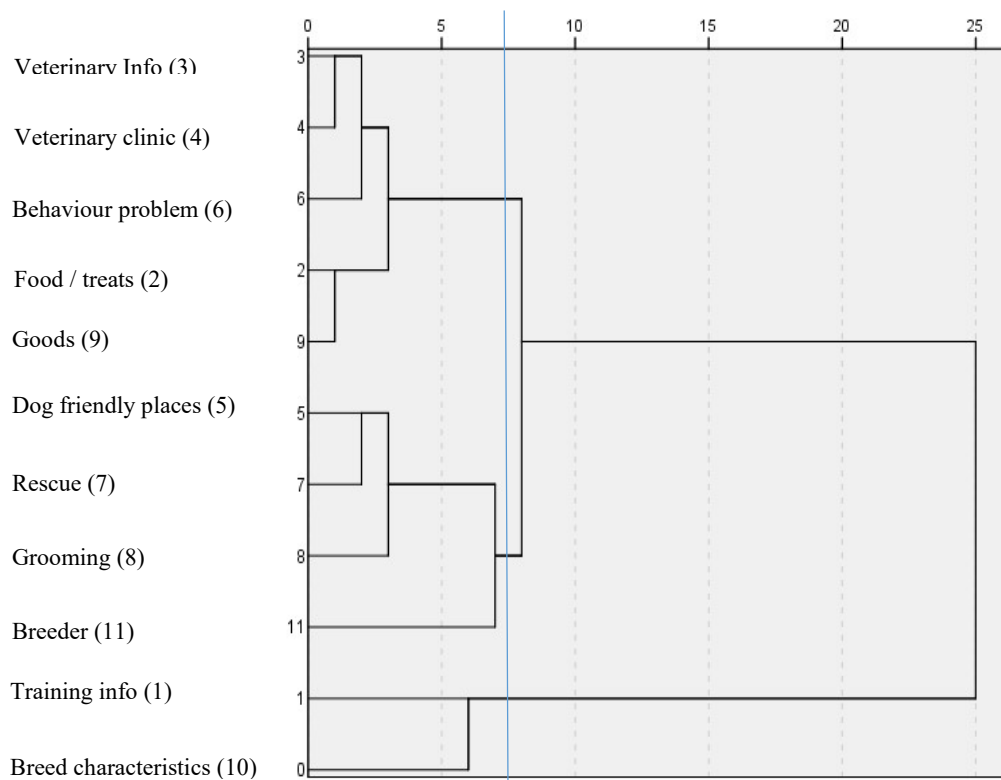


Figure 3. 10. Dendrogram showing the grouping of 11 variables which were selected from the distinct cluster of English and Japanese language respondents for type of information sought



### 3.3.6.2. Source of information

After hierarchical cluster analysis, of the English language respondents, the 10 variables grouped into 2 distinct clusters (Figure 3.11). The first cluster had 7 variables which appear to relate to ‘General media / access’. The second cluster had 3 variables that appear to relate to ‘Personal contacts and Internet (IT)’. For Japanese respondents there were 3 clusters. The first cluster had 7 variables which appear to relate to ‘Personal contacts’. The second cluster had 2 variables that appear to relate to ‘General media /access’ and the third cluster had 1 cluster which seems to relate to ‘Internet (IT)’ (Figure 3.12). The structure of the combined populations showed a 3 cluster solution similar to the English language population (Figure, 3.13). However, in Japanese respondents, the Internet was the independent cluster, while the Internet in English language respondents was related closely to ‘Friends’ and ‘Expert’.

Figure 3. 11. Dendrogram showing the grouping of 10 variables which were selected from the distinct cluster of English language respondents for Source of knowledge

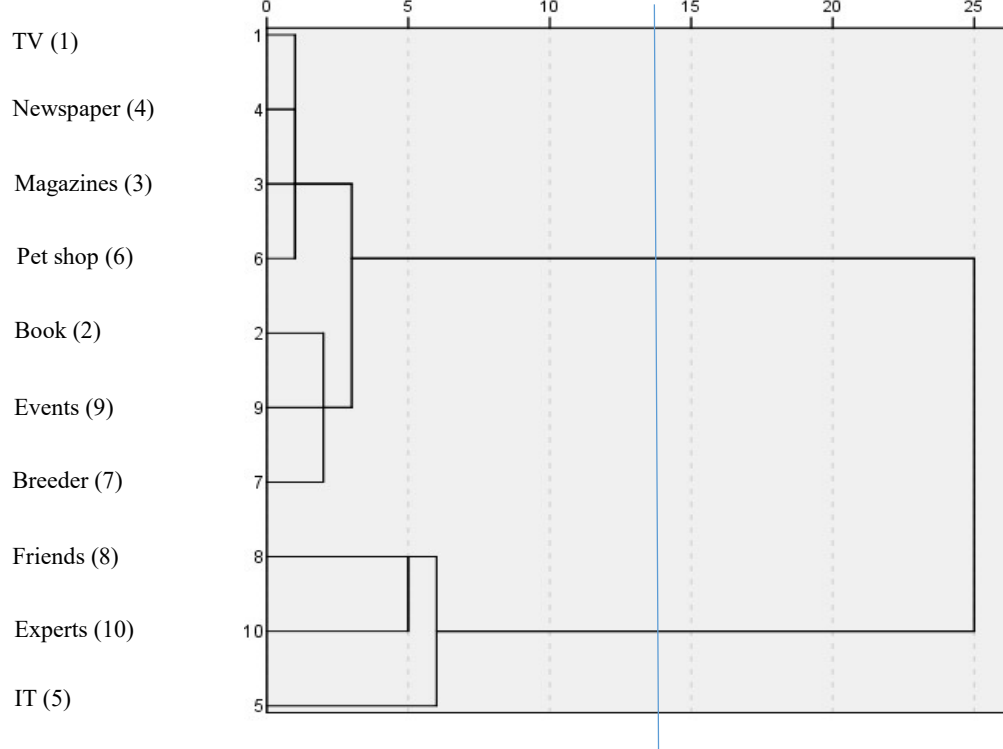


Figure 3. 12. Dendrogram showing the grouping of 10 variables which were selected from the distinct cluster of Japanese language respondents for categories of Source of knowledge

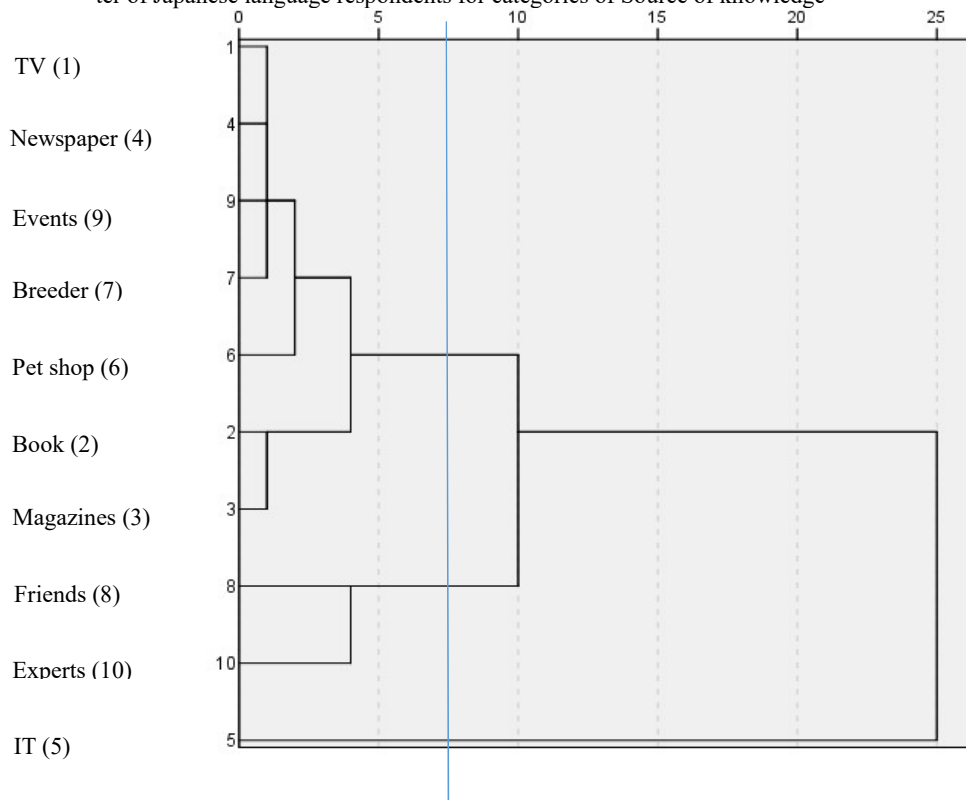
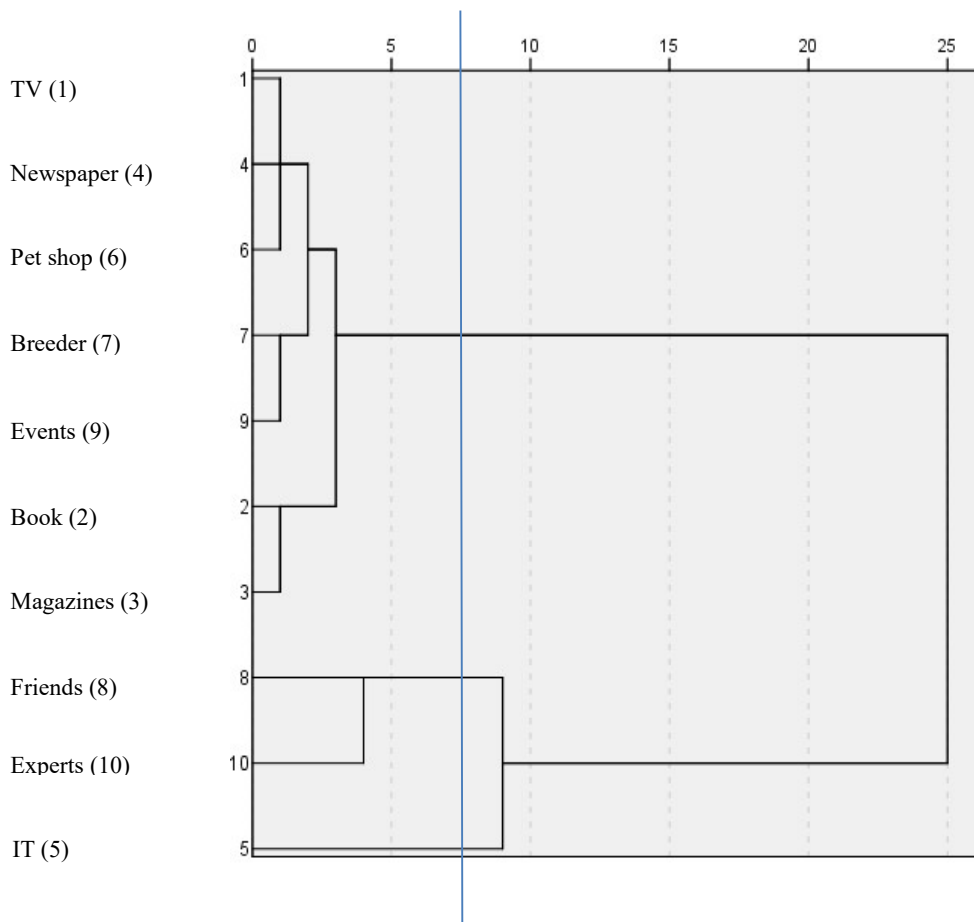


Figure 3. 1. Dendrogram showing the grouping of 10 variables which were selected from the distinct cluster of English and Japanese language respondents for categories of source of knowledge



### 3.3.7. Handling experience of owners with dogs

A total of 1,240 participants of both populations, had experience of dog training classes and therefore, were required to answer further questions relating to their level of handling experience. Less than 50% of Japanese respondents had training class experience while 82% of English language respondents reported participating in training classes (Appendix Table 3. 14). The distribution of the participants' level of competence in each population is summarised in Appendix Table 3.15. The highest population of level of handling experience was “basic level” in both populations (English speakers: N=381, 33.2%, Japanese speakers: N=112, 17.7).

There was significant difference between English and Japanese language respondents for each of two groups: high level of experience (English speakers:  $M = 645$ , Japanese speakers:  $M = 544$ ,  $p < 0.05$ ) and basic level of experience (English speakers:  $M = 595$ , Japanese speakers:  $M = 696$ ,  $P < 0.05$ ) which were converted by 6 level of competence in each population (Table 3.14). English language respondents showed much higher score in high level of experience than Japanese language respondents.

Table 3 14. Results of Mann-Whitney U test between the ‘Basic level of experience’ and ‘High level of experience’ regarding ‘Handling experience’ for both English and Japanese language populations average rank score and  $U$  statistic. z-score and p-value

	<b>Mann-Whitney U</b>	<b>Wilcoxon W</b>	<b>Z</b>	<b>Asymp. Sig. (2-tailed)</b>	<b>Two populations</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
<b>Basic level of experience</b>	118303.500	559633.500	-4.933	.001	English LR	939	595.99	559633.50
					Japanese LR	301	696.97	209786.50
					Total	1240		
<b>High level of experience</b>	118303.500	163754.500	-4.933	.001	English LR	939	645.01	605665.50
					Japanese LR	301	544.03	163754.50
					Total	1240		

### 3.3.8. Training methods

Based on the distribution of 12 total scores for both positive reinforcement and positive punishment training methods in the two populations (see Table 3.2. Dog Management Factor, Scoring system), the English language respondents (Appendix Table 3. 16) showed a much higher score for the positive reinforcement method ( $M=1.9084$ ) than Japanese language respondents ( $M=.8703$ ), and Japanese respondents showed much higher scores for the positive punishment method ( $M=1.5854$ ). Mann Whitney U-test showed significant difference between English and Japanese language respondents (Table 3.15).

Table 3 15. Results of Mann-Whitney U test between the ‘Positive reinforcement’ and ‘Positive punishment’ regarding Handling experience for both English and Japanese language populations average rank score and *U* statistic, z-score and p-value

	<b>Mann-Whitney U</b>	<b>Wilcoxon W</b>	<b>Z</b>	<b>Asymp. Sig. (2-tailed)</b>	<b>Two populations</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
<b>Positive reinforcement</b>	198453.000	398481.000	-16.250	.001	English LR	1146	1032.33	1183050.00
					Japanese LR	632	630.51	398481.00
					Total	1778		
<b>Positive punishment</b>	236632.500	893863.500	-12.704	.001	English LR	1146	779.99	893863.50
					Japanese LR	632	1088.08	687667.50
					Total	1778		

### 3.4. Discussion

The aim of this chapter was to investigate differences and similarities in demographics, culture and dog management between English and Japanese language respondents and to reduce the variables for the further analysis.

One reason to use internet surveys was that it allowed the quick and standardised collection of information. It is well known that those speaking English language, particularly in the UK and North America who were the main respondents in this survey, have a long history of activities in relation to animal rights and welfare (Jasper and Nelkin, 1992; Kean, 1998; Fraser, 2008), but the Japanese have also been considering dog welfare for a long time, particularly since Shogun Tsunayoshi (1646-1709) actively protected dogs (the *Edicts on Compassion for Living Things*). This consideration of welfare is more than that seen in other countries in Asia (Bodart-Bailey, 2007), for example, the eating of dogs is known in Korea (Podberscek, 2009). Thus Japan is not representative of wider Asia as it is considered to have a much higher welfare standard than the rest of the continent, and thus differences may not be due to caring about dogs. Nonetheless dog trainers may have different views or perceptions of HDAB from their experience and expertise. Overall the results indicate important differences and similarities between the two sets of respondents that may relate to demographics and culture.

#### 3.4.1. Demographic differences

Eight out of 11 categories showed significant demographic differences between English and Japanese language respondents. These differences may be important when considering people's perception of HDAB, which is considered in the next chapter.

#### 3.4.2. Collectivist or individualist tendency

As expected Japanese respondents were more collectivist than English respondents. Particularly, the collectivist statement: "I would not want to cause irritation to other people" showed a very large difference between the two sets of respondents (Mean rank: English=715.84, Japanese=1204.40). This finding is consistent with the suggestion that people in Western countries were more likely to be independent of other people, and Japanese people were more likely to be socially oriented (Hofstede, 1980; Traiandis, 1995; Matsumoto, 1999; Gelfand *et al.*, 2001). The

result may indicate that Japanese dog owners tend to prioritize concerns affecting other people over their dogs when compared with English language respondents. However, the statements available not only reflected such cultural differences, but also referred to different personal attributes, such as the tendency to blame others or the need to avoid self-embarrassment and legal concerns, e.g. Dangerous Dogs Act 1991 in the UK. The culturally ambiguous item which was the one removed from the analysis ('I do not want to make my dog's behaviour worse') was the first choice for English language and the second choice for Japanese language respondents, and this may reflect the problem that some items may be viewed quite differently by different cultural groups, resulting in artificial similarity. In the case of this item, people who selected this statement may be concerned with other people or dogs. For example, they may consider that they do not want their dog to get worse, because this may cause a problem with other people, rather than because of the impact on the dog per se. This highlights the importance of careful wording and a potential concern with the simple translation of surveys between cultures, without considering how it might be viewed, which may be quite different to the original intention.

#### 3.4.3. Attitude towards aggression

Both populations agreed more with using both physical punishment and verbal correction for a child and a dog, rather than using the method of taking away something important. Japanese respondents indicated more agreement with using physical punishment than English language respondents for a child and dog, as reported in previous studies (Fujihara *et al*, 1999; Ramirez, 2007). Japanese respondents also showed more violent reactions than non-violent reactions towards a child, but showed slightly more non-violent reactions than violent reactions towards a dog, although they still agreed with using physical punishment higher than English language respondents. This suggests that although Japanese respondents may be more violent in general, they also make a greater distinction between dogs and humans, thus the relationship between violence to humans and non-human animals is clearly complex and probably culturally dependent. Such differences towards a child between the two populations may reflect childrearing across the countries. Mothers in Japan consider that young children have a limited ability to do things therefore they tend to control children (children rely on parents) (Power *et al*, 1992; Bendict, 2005). 'Physical punishment' (known as "*Taibatsu* (Corporal punishment)" in Japan) to Japanese people is likely to be part of accepted disciplinary practices for children which shows the mother's author-



ity (Power *et al.*, 1992; Chang *et al.*, 2006; Dussich and Maekoya, 2007; Miller, 2010) or teachers authority (Yoneyama, 2012; Hagiwara and Wolfson, 2013). On the other hand, in western countries, mothers hope for independence for their children and encourage them to become independent from an early age (Caudill and Schooler, 1973; Vogel, 1963, Power *et al.*, 1992; Pomerantz and Wang, 2009). Therefore, their attitude is typically more nurturing towards children (Power *et al.*, 1992; Hagiwara and Wolfson, 2013; Pomerantz and Wang, 2009). The results would seem to indicate that English language respondents may treat a dog and a child in a similar way and react to aggression from either towards themselves similarly at several levels. On the other hand, Japanese language respondents may make more distinction between a child and dog. Japanese respondents may consider that dogs have more limitations in their ability to follow their instructions than children, and thus should be tolerated or responded to more generously (Benedict, 2005; Power *et al.*, 1992); but physical punishment of a dog's behaviour may be considered more justifiable if the dog displays serious aggressive behaviour (see 3.4.7. Handling experience and training methods). Such differences between two populations may affect their perception of HDAB, as, in Japan (with its focus on collectivist responsibility), it may be the act that is most important, rather than the intention, and so there may be less interest in observation or investigation of the cause of HDAB in dogs.

#### 3.4.4. Attitude towards HDAB

English and Japanese language respondents defined their attitudes towards HDAB differently, as evidenced by the different clustering. However, each group contained many common variables, which were related to not making matters worse and trying to move away from the situation and acknowledging the owner's responsibility while not knowing what to do. Asking a behaviourist, shouting and scolding were more prevalent among English language respondents. On the other hand, doing nothing, ignoring and observing a reactive dog in public were more prevalent among Japanese language respondents. This may indicate that English language respondents try to actively control or handle HDAB, while Japanese respondents tend to do wait and see how the situation develops.

It seems that the two populations show a similar attitude (similar consideration) towards HDAB, but may react differently. Japanese participants may not know how to handle the behaviour because they do not have sufficient understanding given the findings relating to popular Japanese media found in Chapter 2. Another possible reason behind this difference may be that Japanese

respondents do not appear to have as much handling experience as English language respondents; as fewer owners participate in any form of training class (see 3.3.7. Handling experience and training methods). A lack of experience in handling and communicating with dogs seems to relate to inappropriate responses to aggressive behaviour in dogs (Peachy, 1993; Bahlig-Pieren and Tuner, 1999; Kerswell *et al*, 2009; Costa *et al*, 2014; Fidler *et al*, 2015). The attitude could also be based on a personal view that it is a dog's natural behaviour or it is not necessary to make an effort to control the dog, but this may, at least in part be contrary to the concern expressed over the impact of the dog's behaviour on others. Therefore, it is important to investigate further whether such differences between English and Japanese language respondents relate to their knowledge, handling experience of a dog's behaviour or wider cultural differences.

#### 3.4.5. The value and role of the dog

English and Japanese language respondents clustered slightly differently but there were many commonalities, which seem to focus on the inclusion of the dog as a non-human family member with respect to the physical and psychological support that it provides, and attention given to the importance of certain factors in choosing a dog with respect to physical and psychological characteristics. 'Companionship' in English language respondents and 'Relaxation' in Japanese respondents were seen as more important characteristics in the two populations, as the result of the distribution of English and Japanese language respondents and also suggested by previous surveys (PMFA, 2012; Ishida, 2007; Nippon Com, 2016). It may indicate that English language respondents view their dogs as a form of company with whom they can do something together (In the results of how owners spend time with dogs, "playing with toys together in the house" was the third). On the other hand, Japanese respondents expect psychological satisfaction (e.g., put on fashionable clothes, colouring nails or just being close together without playing or taking for a walk, in the results of how owners spend time with dogs, "sleeping together in bed" was the second) from their dogs, with different qualities in their relationship. "Size" and "Appearance" appeared to be important for Japanese respondents when choosing their dog. As predicted, Japanese owners seem to expect their dogs to be very much for their convenience. Physical aspects are more important for Japanese than English language respondents and this may be related to the specific role of dogs to Japanese respondents, e.g. prestige - owners wish to show off their dogs (Veever, 1985), or anthropomorphic attitudes towards their dogs which perceive them (like

their children) to be more emotionally reactive than owners who had non-anthropomorphic attitudes (Szantho *et al.*, 2017). Such different expectations for dogs may be relevant to the perception of HDAB, e.g., Japanese respondents are less interested in understanding their dog's behaviour than English language respondents and so may perceive it differently.

#### 3.4.6. Type of information sought and Source of knowledge

The structure of the type of information differed slightly between English and Japanese language respondents. In Japanese respondents 'training information' was related to information on practical care such as 'Goods', 'Food / treats', 'Veterinary clinic' and 'Veterinary information', while in English language respondents, 'Training information' was related to only 'Breed characteristics'. This may indicate a fundamentally different attitude towards training. There are still not many dog owners who had a professional service (only 3.5% out of total dog owners N=8,903) in Japan (JPFA, 2018). This is reinforced by the close association amongst Japanese respondents between information for 'Behaviour problem' and information from 'Breeder / pet shop', while English language respondents associated 'Behaviour problem' information more closely with 'Veterinary information'. This may also reflect different views of the veterinary profession in the two cultures. There are many behavioural specialists in western countries (particularly UK and USA), where they also have professional organisations (APBC, 2019), on the other hand, there are not many behavioural specialists in Japan (JVSAB, 2019). This may affect the result, e.g., In Japan, the pet shop seems the most popular source for dog owners (JPFA, 2018). Japanese people may not know where to ask about a dog's behaviour problem or training information, therefore they usually ask the familiar places where they often go such as the pet shop or breeders where they obtained their dogs. In the study of the popular media in Chapter 2, Japanese dog owners seemed to search information for behaviour problems from pet company sites, while UK owners often searched information from professionals. This may also indicate Japanese dog owners do not care very much where they obtain information from rather than English language respondents (in another word, Japanese people may prioritize 'convenience' to access rather than 'quality of information') and it may reflect people's quality of knowledge. Overall, the results indicate a similar structure with dog owners grouping information into that which obtained from 'General media', 'Personal opinion' and 'IT' between two populations.

However, it is not known to what degree the groups may differ in the balance of use placed between these sources of information. Even though people may seek information from any of those three media, selecting quality of information would be crucial.

#### 3.4.7. Handling experience of owners with dogs and training methods

There was a significant difference for “high level of handling experience with dogs” between English language respondents and Japanese language respondents. English language respondents showed higher scores than Japanese language respondents. The difference of level of experience with dogs between two populations may influence their perception of HDAB. Moreover, Japanese owners’ participation in any training classes was much less than English language owners. It is considered that many Japanese owners may train their dogs in their own way. These aspects may influence their handling experience with dogs and knowledge of dog’s behaviour. Even though most English language owners participated in training classes, the training methods used, such as positive reinforcement (Hiby *et al.*, 2004; Blackwell *et al.*, 2008; Rooney and Cowan, 2011; Deldalle and Gaunet, 2014), positive punishment (Schider and Van der Borg, 2004; Blackwell and Casey, 2006; Schalke *et al.*, 2007; Arhant *et al.*, 2010), and what the owners learn in the class may all affect their approach to HDAB. There was a significant difference using positive reinforcement and positive punishment between English language respondents and Japanese language respondents. English language respondents showed higher scores than Japanese language respondents for using positive reinforcement, while Japanese language respondents showed higher scores than English language respondents for using positive punishment. This finding may relate as much to differing attitudes towards aggression as it does to training and this might also be related to owners’ lacking the observation of their dogs’ emotions.

### 3.5. Conclusion

This chapter has highlighted important differences between Japanese and English language respondents in a survey relating to dog ownership and dog management culture, which are of importance in understanding how different cultures may both view and treat their dog’s behaviour. It is hypothesised that many of these attributes may impact on their perception of HDAB, however it is in the next chapter that these relationships are explored statistically (to examine the pattern consistent across both populations).

## **Chapter 4: Internet survey on cultural differences which affects people's perception of HDAB**

This chapter examines how people perceive HDAB and what cultural factors (General culture and Dog management culture) predict people's perception of HDAB. The elements identified in Chapter 3 were used to investigate cultural effects on the perception of HDAB.

### **4.1. Introduction**

The previous chapter described cultural differences and similarities between English and Japanese language respondents about dog management in relation to aggressive behaviour. Categories of societal-cultural themes such as collectivism or individualism, attitude towards aggression and HDAB, the role of a dog and handling experience / training methods were found to be different between English and Japanese language respondents.

In this chapter, how people perceive HDAB and what cultural factors affected people's perception of HDAB are explored. We consider five aspects of people's perception of HDAB as dependent variables, which are defined as follows:

#### **4.1.1. Perception of communicative signals related to aggressive behaviour**

People's perception of aggressive behaviour in dogs may vary. People may perceive aggressive behaviour in dogs from specific communicative signals and signs of arousal such as biting, snapping, baring teeth, growling, snarling, lunging, and barking which have been often described as "aggression" in the literature (Reisner, 2003; Horwitz, 2012). People may recognise some signs, e.g., baring teeth, snarling, snapping, nipping, growling, biting (Mills and Mills, 2003; Mills and Westgarth, 2017), or staring (Shepherd, 2009) more easily than other, e. g., subtle sighs; yawning, shaking, circling (Aloff, 2018; Shepherd, 2009) or some people may recognise a wider range of behaviour as aggressive. Moreover, when people perceive aggressive behaviour in dogs, where they pay attention to dog's communication signals may vary as well. Some people may pay attention to only the visual signals, e.g. facial expression, body posture, movement or to those of only one body region, e.g. tail movement or only to their auditory signals, i.e., vocalizations.

Differences in perception may be influenced by cultural factors (Markus and Kitayama, 1991; McDonald *et al.*, 2011). Therefore, in order to work towards building a comprehensive framework of HDAB, what behaviour in dogs are perceived as aggressive and which elements of dog signalling are given attention in the context of HDAB were clarified and factors predicting this were investigated.

#### 4.1.2. Perception of causes of HDAB

People's perception of the potential causes of HDAB is an important part of their general perception of HDAB, but may be limited by a lack of consideration for the potential state of the dog's motivation and emotion. As Chapter 1 described, some people may label almost any aggressive behaviour in a dog as "dominance aggression" without considering the dog's emotion. In Chapter 2, 'dominance' was found to be the most frequent label for the motivation of the behaviour (without consideration of the dog's emotion) and 'fear' was the most frequent label for the emotional basis to aggressive behaviour in common circumstances, although there are other emotions and motivations that can be involved, e.g., seeking (desire), play, frustration, pain (Mills *et al.*, 2014; Mills, 2017; Mills and Westgarth, 2017, see Chapter 1.3). Therefore, it is important to identify how people perceive the potential causes of the behaviour in different circumstances and the factors that might predict this.

#### 4.1.3. Perception of motivation and emotion

Previous studies have revealed that people perceive dog's complex emotions such as jealousy or guilt easily in dogs (Morris *et al.*, 2008; Hecht *et al.*, 2012), but that they experience difficulty in recognising subtle signs, e.g., looking away, yawning and nose licking (Mariti, 2012). In Chapter 2, the limited range of emotions referred to in the media was clear. The limited perceived motivations and emotions for HDAB may result in people finding it difficult to recognise subtle signs. Inferences about motivation and emotion are essential to the understanding of aggressive behaviour (Mills *et al.*, 2013; Mills *et al.*, 2014; Mills and Westgarth, 2017). Therefore, it is important to identify to what extent people perceive them and whether they recognise subtle signs in order to appreciate their perception of HDAB.

#### 4.1.4. Important elements for the prevention of HDAB

Previous studies suggested that individuals' attitudes guide their subsequent perceptions (Fazio et al, 1986; Roche, 2007). Not only people's knowledge, but also their attitude (thoughts, intention) about the prevention of HDAB may make up an important part of their perception of HDAB. When people consider that learning to recognise a dog's communication signalling, or understanding that the reason why dogs develop aggressive behaviour is more important or prioritize than controlling the dog or avoiding having contact with people, they may pay more objective attention to how they perceive the dog's signalling of HDAB. It is hypothesised that people who place more importance on learning to recognise a dog's communication signalling, or understanding the reasons why dogs develop aggressive behaviour may try to perceive HDAB more carefully than those focused on obtaining skills for controlling the dog and avoiding having contact with people.

#### 4.1.5. The priority methods for the modification of HDAB

People's priorities for the modification of HDAB is also an important part of their perception of HDAB. For example, some people may prioritize keeping good communication with their dogs, others may prioritize making the dog obey commands easily. These differing attentions and concerns for their dogs may reflect differing perception of HDAB. It is hypothesised, that people who prioritize methods which maintain good communication with their dogs may also perceive dog behaviour more carefully.

#### 4.1.6. The hypothesis and aim

It is hypothesised that cultural and personal factors identified in the previous chapter (i.e. individualism or collectivism, attitude towards aggression and HDAB, the role of dogs, type of information sought, handling experience with dogs, training method) alongside wider demographic factors (i.e., nationality, ethnic group, and country of residence) may be of varying importance in predicting these above 5 elements of people's perception of HDAB.

The aim of this chapter was therefore to determine how people perceive HDAB and what factors influence people's perception of HDAB, as well as the relationship between them.

## **4.2. Materials and methods**

### 4.2.1. Subjects and model design

#### 4.2.1.1. Subjects

The responses from a total of 1146 English language and 632 Japanese language dog owners (same sample as Chapter 3) were used to analyse how people perceive HDAB and what cultural factors influence people's perception of HDAB.

#### 4.2.1.2. Questionnaire and model design

This is a continuation of the analysis from the questionnaire in Chapter 3. The same internet survey questionnaire from Chapter 3 (Appendix, Table 3.1) was used, but specifically Part IV: 'perception of behaviour in dogs', was added to use as the dependent variables (ten measurements) for the further analysis to identify the relationship between cultural factors and perception of behaviour in dogs in the current study (Table 4.1):

- Perception of communicative signals of aggressive behaviour
- Perception of cause of HDAB
- Perception of motivation and emotion
- Perceived important elements for the prevention of HDAB
- Perceived priorities for the modification of HDAB

In order to investigate people's perception of HDAB and what cultural factors influence it, the following models were designed covering 'general culture' and 'dog management culture' (see Chapter 3, 3.1).

#### I. People 's perception of HDAB

Ten new measurements related to people's perception of HDAB, which belong to the five aspects described in the introduction were created and used as dependent variables relating to people's perception of HDAB. How dependent variables were created and the scoring system used are described in Table 4.1.



For the second factor “Perception of cause of HDAB”, three scenarios A, B, C (see Table 4.1: Measurement items) were created and the most frequently chosen answer within top three ranks from the three scenarios was used for the analysis. For the third factor “Perception of emotion and motivation” (see Table 4.1: scoring system), three experts evaluated 10 photos (Appendix Table 3.1 Q29), with the 5 options for each emotion and motivation converted into two groups: either positive/negative (see Table 4.1: measurement items) or maintain /withdrawal respectively, with one photo (photo, g) deleted as the experts were not in total agreement for emotion.

Table 4 1. Summary of measurement items, scoring system and statistical analyses used for responses related to “People’s perception of HDAB”

Factors relating to Perception of HDAB	Measurement items	Measurement function used as dependent variable	Scoring system	Statistical method used and research question
1.Perception of communicative signals of aggressive behaviour	<p>A. Which elements the person pays attention to in order to determine aggressive signalling from the dog.</p> <ul style="list-style-type: none"> <li>a) Vocalization</li> <li>b) Movement</li> <li>c) Context</li> <li>d) State of arousal</li> <li>e) Facial expression</li> <li>f) Body posture</li> </ul> <p>B. Which behaviour in dogs make people consider as aggressive.</p> <p>9 different behaviours:</p> <ul style="list-style-type: none"> <li>a) Baring teeth</li> <li>b) Snarling</li> <li>c) Nipping</li> <li>d) Staring</li> <li>e) Growling</li> <li>f) Snapping</li> <li>g) Biting</li> <li>h) Lunging</li> <li>i) Barking</li> </ul> <p>C. Which signals may predict that a dog may bite.</p> <p>30 different behaviours:</p> <ul style="list-style-type: none"> <li>1. Squinting eyes</li> <li>2. Blinking</li> <li>3. Looking away</li> <li>4. A direct stare</li> </ul>	<p>2 variables</p> <ul style="list-style-type: none"> <li>· Complete agreement (a – f)</li> <li>· Partial agreement (some of a-f)</li> </ul> <p>2 variables</p> <ul style="list-style-type: none"> <li>· Likely</li> <li>· Unlikely</li> </ul> <p>Single variable</p> <p>A total score out of 30</p>	<p>A (Q. 25) Multiple answer</p> <p>The items were converted into two categories (binary score): Total score 6 = 1 or any other score = 0</p> <p>B (Q. 26) 7 points Likert scale is converted into binary score: likely=1 (somewhat likely, likely, very likely), unlikely=0 (very unlikely, unlikely, somewhat unlikely, undecided)</p> <p>C (Q. 27) Multiple answers Score: 0-30</p>	<p>Discriminant function Analysis:</p> <ul style="list-style-type: none"> <li>• Which factors best discriminate between individuals who pay attention to all of the elements (a-f) versus those who do not</li> </ul> <p>logistic regression analysis:</p> <ul style="list-style-type: none"> <li>• Which factors are associated with increased or reduced “Likely”.</li> </ul> <p>Multiple regression analysis:</p> <ul style="list-style-type: none"> <li>• Which factors are related to the higher</li> </ul>

	<ol style="list-style-type: none"> <li>5. Open eyes</li> <li>6. White around the eyes</li> <li>7. Head turned to the side</li> <li>8. Head down</li> <li>9. Folding the ears back</li> <li>10. Ears pricked</li> <li>11. Baring teeth</li> <li>12. Open mouth and retracted lips</li> <li>13. Tail tucked / down</li> <li>14. Tail up / stiff</li> <li>15. Tail slowly wagging</li> <li>16. Weight forward</li> <li>17. Weight back</li> <li>18. Body/muscle tension</li> <li>19. Hair raised on shoulder / back</li> <li>20. Growling</li> <li>21. Barking</li> <li>22. Snarling</li> <li>23. Lunging</li> <li>24. Yawning</li> <li>25. Shaking</li> <li>26. Circling</li> <li>27. Paw lifting</li> <li>28. Tongue flick</li> <li>29. Sniffing</li> <li>30. Scratching</li> </ol>			score for predictive dog bite signals
2. Perception of cause of HDAB	<p>How people clarify the cause in certain circumstances (3 circumstances)</p> <p>A. An owner is walking with their dog on a lead in a park and an unfamiliar person approaches the dog. The dog growls and snaps at him.</p> <p>B. A dog is in a fenced garden or in a house and sees someone outside (i.e. the postman, or a</p>	<p>A 2 items:4 variables</p> <p>The item that the most frequently chosen answer</p> <ul style="list-style-type: none"> <li>• Selected rank 1</li> <li>• Selected other choices</li> </ul>	<p>2. (Q. 28)</p> <p>A: 2 items of the most and second frequently chosen answers were analysed separately:</p>	<p>logistic regression analysis</p> <ul style="list-style-type: none"> <li>• Which factors are associated with increased or reduced “rank 1 (scenario A,</li> </ul>

	<p>delivery person). The dog dashes up to the boundary and barks at the person until the person goes away.</p> <p>C. An owner is using a toy to play a game of “tug of war” with his/her pet dog. The dog starts to growl and it bites the owner’s hand when the owner tries to pull the toy away.</p> <p>13 items in A, B and C are as follows:</p> <p>a) The dog is feeling pain  b) The dog does not like the person  c) The dog is afraid of the person  d) The dog is challenging the person  e) The dog is playing with the person  f) The dog displayed the behaviour accidentally  g) The dog is feeling threatened by the person  h) The dog is desiring interaction with the person for pleasure  i) The dog is frustrated by the prospect of losing something  j) The dog is frustrated by the inability to interact with the person  k) The dog is frustrated by the limits of the available free space in which to operate  l) Other  m) I am not sure</p>	<p>The item that the second frequently chosen answer</p> <ul style="list-style-type: none"> <li>· Selected rank 2</li> <li>· Selected other choices</li> </ul> <p>B 2 variables</p> <ul style="list-style-type: none"> <li>· Selected rank1</li> <li>· Selected other choices</li> </ul> <p>C 2 variables</p> <ul style="list-style-type: none"> <li>· Selected rank 1</li> <li>· Selected other choices</li> </ul>	<p>Rank 1, 2= score 1, other choices= score 0</p> <p>B &amp; C:  rank 1= score 1, other choices= score 0</p>	<p>B, C)” or “rank 2 (scenario A)”</p>
3. Perception of emotion and motivation	<p>Which motivational and emotional state of the dog is recognized for 10 photos (Appendix Table 3.1 Q29).</p> <p>5 items of each photo are as follows:  P=positive, N=negative, M=maintain, W=withdrawal</p> <p>Emotion</p> <p>a) I am happy with the situation P  b) I am relaxed at the moment P</p>	<p>2 variables</p> <p>Groups:</p> <p>Emotion</p> <ul style="list-style-type: none"> <li>· Positive</li> <li>· Negative</li> </ul> <p>Motivation</p> <ul style="list-style-type: none"> <li>· Maintain</li> <li>· Withdrawal</li> </ul>	<p>3. (Q.29)</p> <p>Single answer for 10 photos of emotion and motivation</p> <p>Agreement with experts across all images</p> <p>Total score for</p>	<p>Multiple regression analysis</p> <ul style="list-style-type: none"> <li>• Which factors are related to the higher score for agreement with experts for emotion and motivation</li> </ul>

	<p>c) I am anxious with the situation N  d) I am scared by someone / something N  e) I am frustrated by the situation N</p> <p>Motivation</p> <p>a) I want to get away from this situation W  b) I want to stay in this s situation M  c) I want to keep interacting M  d) I am observing how this situation develops W  e) I want to be left alone W</p>	<p>Agreement with expert=1  Disagreement with expert=0</p> <ul style="list-style-type: none"> <li>Emotion: a total score 0-9</li> <li>Motivation: a total score of 0-10</li> </ul>	<p>emotion 0 – 9 (photo g excluded) and motivation 0 – 10 were used as DVs</p>	
4. The activities perceived as most important for the prevention of HDAB	<p>Factors for the prevention of HDAB  6 elements:</p> <p>a) Obedience training from an early age  b) Preventing the dog having contact with people  c) Learning training methods to control your dog  d) Opportunities to socialize dogs with people from an early age  e) Understanding the reasons why dogs develop aggressive behaviour  f) Learning to recognize/read canine body language, signalling and emotion  g) Other</p>	<p>2 variables</p> <ul style="list-style-type: none"> <li>All of top three choices</li> <li>Other choices</li> </ul>	<p>4. (Q. 30)  Selected all of top three choices= 1, other = 0</p>	<p>Logistic regression analysis</p> <ul style="list-style-type: none"> <li>Which factors are associated with increased or reduced “all of top three choices”.</li> </ul>
5. The priority given to methods for the modification of HDAB	<p>Priorities when choosing a method for the modification of HDAB  7 methods:</p> <p>a) An inexpensive method  b) A method that will easily control the dog  c) A method that helps the dog to easily obey its owner  d) A method that will quickly resolve the behaviour problem  e) A method that does not cause stress to the dog (a kind way)</p>	<p>2 variables</p> <ul style="list-style-type: none"> <li>All of top three choices</li> <li>Other choices</li> </ul>	<p>5. (Q. 31)  Selected all of top three choices= 1, other = 0</p>	<p>Logistic regression analysis</p> <ul style="list-style-type: none"> <li>Which factors are associated with increased or reduced “all of top three choices”.</li> </ul>

	f) A method that does not damage the relationship between the dog and its owner g) Competency or expertise of the person who will advise me h) Other			
--	--	--	--	--

## II. General culture

There were 11 demographic questions used to assess general culture (nationality, ethnic group, country of residence, gender, age groups, living environment, type of home, current work status, household structure, children under 12 years old and over 12 years old who live in the household) with a total of 74 categories within these questions. This total was reduced to 39 categories of independent variables by combining small numbers of populations or similar categories e.g. Nationality, i.e., “North American”, “European” and “Japanese” were major populations, therefore other countries with far fewer respondents were combined as “Other”.

The two categories of English and Japanese language respondents were also included as an alternative predictor, totalizing 41 categories (variables) within this category of “General culture” for the current analyses (Table 4.2).

Table 4 2. 1 demographics factors and 41 categories used for ‘General culture’

Demographic factors	Response categories
1. Nationality	4 categories <ul style="list-style-type: none"> <li>• European</li> <li>• North American</li> <li>• Japanese</li> <li>• Other</li> </ul>
2. Ethnic group	3 categories <ul style="list-style-type: none"> <li>• Caucasian</li> <li>• Asian</li> <li>• Other</li> </ul>
3. Country of residence	4 categories <ul style="list-style-type: none"> <li>• Europe</li> <li>• North American continent</li> <li>• Japan</li> <li>• Other countries</li> </ul>
4. Gender	2 categories <ul style="list-style-type: none"> <li>• Male</li> <li>• Female</li> </ul>
5. Age of the dog owner	5 categories <ul style="list-style-type: none"> <li>• 18-29 years old</li> <li>• 30-39 years old</li> <li>• 40-49 years old</li> <li>• 50-59 years old</li> <li>• Over 60</li> </ul>
6. Living environment	4 categories <ul style="list-style-type: none"> <li>• Urban</li> <li>• Suburban</li> <li>• Semi urban</li> <li>• Rural</li> </ul>
7. Type of home	3 categories <ul style="list-style-type: none"> <li>• House (detached, semi-detached terraced)</li> <li>• Apartment (flat)</li> <li>• Other</li> </ul>
8. Current work status	4 categories <ul style="list-style-type: none"> <li>• Employed (permanent / temporary paid employee, self-employed, part time employed)</li> <li>• No job (unemployed, retired employee and full-time home maker)</li> <li>• Students (full time and part time)</li> <li>• Other</li> </ul>
9. Household structure	4 categories <ul style="list-style-type: none"> <li>• Living with an adult partner in a long term relationship</li> <li>• Living without an adult partner</li> <li>• Living with parents / guardian etc.</li> <li>• Other</li> </ul>
10. Under 12 years old living in the household	3 categories <ul style="list-style-type: none"> <li>• None</li> <li>• One</li> <li>• Over two</li> </ul>
11. Over 12 years old live in the household	3 categories <ul style="list-style-type: none"> <li>• None</li> <li>• One</li> <li>• Over two</li> </ul>
12. English and Japanese language respondents	2 categories <ul style="list-style-type: none"> <li>• English</li> <li>• Japanese</li> </ul>



### III. Dog management culture

In Chapter 3, 23 questions related to dog management culture were reduced from a total of the level of 218 independent variables to 25 independent variables in 8 categories (Table 4.3).

Additionally, two categorical variables related to dog owners who have experienced or not experienced HDAB which may be important in predicting people's perception of HDAB were included. These 27 variables were used as independent variables for the current analyses.

Table 4 3. Eight factors related to ‘Dog management culture’ extracted from the online questionnaire about ‘Cultural differences on people’s perception if HDAB’ in and their respective 27 response elements

<b>Factors of dog management culture</b>	<b>Response elements</b>
1. Owners who have experienced HDAB	2 categories a) Yes b) No
2. Collectivism or individualism	2 elements: a) Collectivism b) Individualism
3. Attitude towards aggression	8 elements a) Physical contact and loud expressions b) Verbal or indirect expressions c) Using physical punishment for children d) Using verbal correction for children e) Using taking away something important from children f) Using physical punishment from dogs g) Using verbal correction for dogs h) Using taking away something important from dogs
4. Attitude towards HDAB	2 elements a) Cluster 1: Not making matters worse and trying to move away from it b) Cluster 2: The behaviour is not acceptable, but do not know what to do.
5. The value / role of the dog:	3 elements a) Cluster 1: Healthy life style b) Cluster 2: Being a non-human family member who provides physical and psychological support c) Cluster 3: Characteristics for selection
6. Type of information sought and Source of knowledge	6 elements Type of information sought: 3 Clusters a) Cluster 1: General media b) Cluster2: Personal opinion c) Cluster 3: IT Source of knowledge: 3 clusters a) Cluster 1: Practical care b) Cluster 2: How to care / access c) Cluster 3: What dog is Like
7. Handling experience	2 elements a) Basic level group b) High level group
8. Training methods	2 elements a) Positive reinforcement b) Positive punishment

#### 4.2.2. Statistical analysis

All statistical tests were performed using IBM SPSS Statistics 22.

The statistical analysis used for the various aspects of perception of HDAB, the measures used, dependent variables and scoring system applied are summarised in Table 4.1.

In order to identify which independent variable(s) might predict the 10 measurements related to people's perception of HDAB one or more of three statistical methods were used based on the nature of the dependent variable:

- Categorical variable: discriminant function analysis (DFA) using a stepwise method, and logistic regression analysis (LRA) using a stepwise forward method (a stepwise selection in SPSS: a forwards and backwards method were tested, but the forward method was preferred). When DFA was performed and it did not effectively discriminate the groups, such as when the classification results are poorly resolved (e.g., likely=99.6%, Unlikely=1.4%), the LRA was conducted, to identify significant predictors, even if their contribution was small (Tabachnick and Fidell 1996).
- Continuous variables: Multiple regression analysis (MRA) was used with a stepwise method.

A total of sixty eight independent variables (41 demographic items: Table 4.2, 27 dog management culture items: Table 4.3) were used until the final model predicted the outcome of each of 10 dependent variables (see Table 4.1: 'measurement items '). Independent variables were retained in the final model of DFA, LRA and MRA using a stepwise method.

According to the statistical method used (DFA, LAR and MRA), the most important predictors in each model were as explained below:

DFA: variables with a coefficient loading  $> 0.3$

MRA: variables with a Beta coefficient  $> 0.1$

LAR: variables with an Odds ratio (OR)  $> 1$

Multicollinearity between the independent variables was assessed by inspecting the variance inflation factors (VIF) with only variables showing a value  $< 0.5$  used in each analysis.

### 4.3. Results

#### 4.3.1. Perception of communicative signals of aggressive behaviour

##### 4.3.1.1. The elements of signalling of HDAB which people pay attention to

The distribution of responses for each of the five potential body regions and context attended to (six elements in total) that might be used to evaluate potential aggressive signalling is shown in Table 4.4. “Body posture” was most widely used, with “Movement” of the animal least often used.

Nearly half of the population claimed to use all six elements (N=793, 44.6%) with only partial use of elements by just over half (N=985, 54.4%).

Table 4.4. The distribution of scoring for attention to each of the 6 possible body regions attended to in order to determine signalling HDAB

Body regions	Frequency	Percent
Vocalization		
Attached to	1404	79.0
Not attended to	374	21.0
<b>Movement</b>		
Attached to	<b>1149</b>	<b>64.6</b>
Not attached to	629	35.4
State of arousal		
Attached	1380	77.6
Not attached	398	22.4
Facial expression		
Attached	1399	78.7
Not attached	379	21.3
<b>Body posture</b>		
Attached	<b>1436</b>	<b>80.8</b>
Not attached	342	19.2
Context		
Attached	1206	67.8
Not attached	572	32.2

Fifteen variables were retained in the DFA to make the discrimination between respondents who use all signals and those who do not (Table 4.5). The canonical correlation between the discriminant score and the groups was 0.473.

The discriminant function showed a highly significant difference between the two groups ( $\lambda=0.776$ ;  $\chi^2=432.501$ ,  $df=15$ ,  $p<0.001$ ) and “North America” ( $r=0.348$ ) was the highest important predictor and “High level of training experience with dogs” ( $r=0.330$ ) was the second important predictors.

The classification results revealed that 70.3% of respondents were classified correctly. Classifying individuals who did not use all signs was done with slightly better accuracy (71.3%) than the group who used all the signs (63.6%).

Table 4 5. Variables remaining in the stepwise discriminant function analysis for predicting whether an individual pays attention to all elements of signalling in HDAB or not

Variables	Standardized coefficient loadings	Cross validation accuracy (%)	
		complete use of signals	partial use of signals
High level of experience with dogs	.330	63.6	71.3
Country of residence: North America	.348		
Training method: Positive reinforcement	.219		
Type of information sought: Personal contact	.218		
Country of residence: Other countries	.225		
Type of home: House	.182		
Attitude towards aggression: Physical contact and loud expressions	.204		
Ethnic group: Caucasian	.222		
Individualism	.143		
Type of information sought: what dog is like	.276		
Attitude towards aggression: Using verbal Correction	-.164		
Attitude towards HDAB: being a non-human family member who provides physical and psychological support	.124		
Source of knowledge: general media	-.179		
Household structure: living with parents and guardian	.113		
Training method: positive punishment	.117		

#### 4.3.1.2. The behaviour in dogs which makes people consider them as aggressive

The distribution of responses for each behaviour (Table 4.6) revealed that nearly 50% of people considered nipping and staring to be either likely or unlikely indicative of aggressive behaviour, but other items were more likely to be indicative of aggressive behaviour except “Barking”. However, nearly 40% of respondents for snapping and nearly 20% for biting considered such behaviours as being unlikely to be linked to aggressive behaviour.

After LRA was conducted using 13 variables (Appendix, Table 4. 1), the variables remaining in the final model which were determined to be the important predictors (more important predictors in each model were described in the following texts) for each behaviour were as follows and are summarised in Table 4.7.

Table 4 6. Proportion of participants considering various signs as either 'likely' or 'unlikely' indicators of HDAB \*the higher percentage of the group is used bold.

Items	a) Baring teeth	b) Snarling	c) Nipping	d) Staring	e) Growling	f) Snapping	g) Biting	h) Lunging	i) Barking
Likely	1,475 <b>(83.0%)</b>	1565 <b>(88.0%)</b>	910 <b>(51.2%)</b>	979 <b>(55.1%)</b>	1,307 <b>(73.5%)</b>	1,116 <b>(62.8%)</b>	1,492 <b>(83.9%)</b>	1,106 <b>(62.2%)</b>	483 (27.2%)
Unlikely	303 (17.0%)	212 (11.9%)	867 (48.8%)	798 (44.9%)	470 (26.4%)	661 (37.2%)	286 (16.1%)	671 (37.7%)	1,294 <b>(72.8%)</b>
Total	1778	1777	1777	1777	1777	1777	1778	1777	1777

a) Baring teeth

Seven of the 68 variables were retained. The final model distinguished between the two groups ( $\chi^2(8) = 50.904$ ,  $df = 1$ ,  $p < .0005$ ), but explained only between 2.9% (Cox and Snell  $R^2$ ) and 4.9% (Nagelkerke  $R^2$ ) of the variance, correctly classifying 83% of cases. By inspecting the “Exp (B)” of Table 4.7, it was possible to identify that “Country of residence” was a significant predictor for how “baring teeth” is interpreted regarding aggressive behaviour: residents of North America and Japan were 2.2 and 2.4 times, respectively, more likely to consider this behaviour as indicative of aggressive behaviour than residents of Europe.

b) Snarling

Six of the 68 variables were retained. The final model significantly distinguished between the two groups ( $\chi^2(6) = 126.316$ ,  $df = 1$ ,  $p < .0005$ ), but the model explained only between 7.1% (Cox and Snell  $R^2$ ) and 13.8% (Nagelkerke  $R^2$ ) of the variance, correctly classifying 88.2% of cases. By inspecting the “Exp (B)” of Table 4.7, it was possible to identify that “Country of residence” was a significant predictor for how “Snarling” is interpreted regarding aggressive behaviour: residents of North America and Japan were 3.1 and 6.3 times, respectively, more likely to consider this behaviour as indicative of aggressive behaviour than residents of Europe. The variable “Ethnic group: Other” associated with 0.4 times less likely to consider this behaviour an indicative of aggressive behaviour than “Caucasian”.

c) Nipping

Five of the 68 variables were retained. The final model significantly distinguished between the two groups ( $\chi^2(5) = 42.690$ ,  $p < .0001$ ), but the model explained only between 2.5% (Cox and Snell  $R^2$ ) and 3.3% (Nagelkerke  $R^2$ ) of the variance and correctly classified 55.4% of cases. By inspecting the “Exp (B)” of Table 4.7, it was possible to identify that “Country of residence” was a significant predictor for how “Nipping” is interpreted regarding aggressive behaviour: residents of North America and Other countries were 1.5 and 1.8 times, respectively, more likely to consider this behaviour as indicative of aggressive behaviour than residents of Europe. On the other hand, residents of Japan associated with 0.65 times less likely to consider this behaviour as indicative of aggressive behaviour than residents of Europe.

Table 4 7. Summary of the results of the final model for the behaviour in dogs a) – i) of which makes people consider them as aggressive from the logistic regression analysis with the stepwise method (see methods for details). Significantly different ( $p<0.05$ ) categories are reported. \*RC=Reference category

Items	Variables in the analysis	Cox & Snell R Square and Nagelkerke R Square	B	Sig	Exp (B)	Cross validation accuracy (%)
a) Baring teeth	Country of residence: RC(Europe) 1. N America 2. Japan 3. Other 4. Attitude towards aggression: physical contact and loud expressions 5. Attitude towards aggression: verbal or indirect expressions 6. Attitude towards aggression: using verbal correction 7. Attitude towards HDAB: being a non-human family member who provides physical and psychological support*	Cox & Snell 2.9 R Square Nagelkerke 4.9 R Square	.777 .879 .430 .034 -.028 .047 .140	.000 .000 .101 .001 .018 .018 .050	2.176 2.409 1.537 1.035 .972 1.048 1.150 .	83%
b) Snarling	Ethnic: RC (Caucasian) 1. Ethnic: Asian 2. Ethnic: Other Country of residence: RC (Europe) 3. Country : N America 4. Country: Japan 5. Country: Other 6. Attitude towards aggression: physical contact and loud expressions	Cox & Snell 7.1 R Square Nagelkerke 13.8 R Square	-.365 -.813 1.123 1.833 .974 .034	.436 .001 .000 .000 .003 .000	.694 .444 3.073 6.252 2.648 1.035	88.2%
c) Nipping	Country of residence: RC (Europe) 1. Country: N America 2. Country: Japan 3. Country: Other 4. Attitude towards aggression: Using verbal Correction 5. Attitude towards aggression: Using physical punishment D	Cox & Snell 2.5 R Square Nagelkerke 3.3 R Square	.372 -.429 .589 .012 .020	.004 .003 .005 .027 .045	1.450 .651 1.803 1.012 1.020	55.4%
d) Staring	Nationality: RC (European)	Cox & Snell 11.1				63.8%



	1. Nationality: N American 2. Nationality: Japanese 3. Nationality: Other 4. Attitude towards aggression: physical contact and loud expression 5. High level of experience	R Square Nagelkerke 14.8 R Square	.727 -.703 1.123 .020 .437	.000 .000 .000 .000 .000	2.070 .495 3.074 1.020 1.547	
e) Growling	Type Home: RC (House) 1. Type Home: Apartment 2. Type Home: Other Nationality: RC (European) 3. Nationality: N American 4. Nationality: Japanese 5. Nationality: Other 6. Attitude towards aggression: physical contact and loud expressions 7. Attitude towards HDAB Being a non-human family member who provides physical and psychological support 8. Source of knowledge: General Media 9. Training method: Positive punishment	Cox & Snell 3.1 R Square Nagelkerke 4.5 R Square	-.263 -.707 .419 -.216 .571 .013 .151 -.015 .180	.042 .141 .000 .008 .121 .032 .009 .049 .001	.769 .493 1.521 .806 1.770 1.014 1.163 .985 1.198	74.2%
f) Snapping	Relationship: RC (Living with an adult partner in a long term relationship) 1. Relationship: Living without an adult partner 2. Relationship: Living with parents / guardian 3. Relationship: other Ethnic: RC (Caucasian) 4. Ethnic: Asian 5. Ethnic: Other Nationality: RC (European) 6. Nationality: N American 7. Nationality: Japanese 8. Nationality: Other	Cox & Snell 26.1 R Square Nagelkerke 35.7 R Square	-.356 .208 -.478 -.759 -.698 .905 -1.534 .645	.020 .236 .076 .030 .001 .000 .000 .020	.700 1.231 .620 .468 .498 2.473 .216 1.905	77.3%

	9. Attitude towards aggression: physical contact and loud expressions		.027	.000	1.028	
	10. IT		.055	.008	1.057	
g) Biting	Ethnic: RC (Caucasian) 1. Ethnic: Asian 2. Ethnic: Other Nationality: RC (European) 3. Nationality: N American 4. Nationality: Japanese 5. Nationality: Other 6. Attitude towards aggression: physical contact and loud expressions 7. Attitude towards aggression: verbal or indirect expressions 8. Source of knowledge: IT	Cox & Snell 9.8 R Square  Nagelkerke 16.8 R Square	-.438 -.720 1.554 -.259 1.028 .044 -.040 .052	.286 .008 .000 .531 .013 .000 .003 .025	.645 .487 4.731 .772 2.796 1.045 .960 1.054	84.1%
h) Lunging	Ethnic: RC (Caucasian) 1. Ethnic: Asian 2. Ethnic: Other Nationality: RC (European) 3. Nationality: N American 4. Nationality: Japanese 5. Nationality: Other 6. Attitude towards aggression: Verbal or indirect expressions 7. Attitude towards aggression: Using take thing away 8. Attitude towards aggression: Using take thing away D	Cox & Snell 16.4 R Square  Nagelkerke 22.3 R Square	-.238 -.638 1.121 -.846 .940 .021 .073 -.089	.492 .002 .000 .017 .000 .000 .014 .000	.788 .529 3.068 .429 2.560 1.022 1.076 .915	69.6%
i) Barking	1. Attitude towards aggression: Physical contact and loud expressions 2. Attitude towards aggression: Verbal or indirect expressions 3. Type of information sought: What dog is like 4. Source of knowledge: General Media 5. Source of knowledge: IT	Cox & Snell 3.7 R Square  Nagelkerke 5.4 R Square	-.017 .042 -.067 .038 .051	.046 .000 .003 .000 .014	.984 1.042 .935 1.039 1.053	73.0%

d) Staring

Five out of the 68 variables were retained. The final model significantly distinguished between the two groups ( $\chi^2 (5) = 200.529, p < .0001$ ), and the model explained between 11.1% (Cox and Snell  $R^2$ ) and 14.8% (Nagelkerke  $R^2$ ) of the variance and correctly classified 63.8% of cases. By inspecting the “Exp (B)” of Table 4.7, it was possible to identify that “Nationality” was a significant predictor for how “Staring” is interpreted regarding aggressive behaviour: North Americans and Other nationalities were 2.1 and 3.1 times, respectively, more likely to consider this behaviour as indicative of aggressive behaviour than Europeans. However, Japanese associated with 0.5 times less likely to consider this behaviour as an indicative of aggressive behaviour than Europeans. The variable “High level of experience with dogs (no reference category)” associated with more likely to consider this behaviour as indicative of aggressive behaviour.

e) Growling

Nine out of the 68 variables were retained.

The final model significantly distinguished between the groups ( $\chi^2 (9) = 53.409, p < .0001$ ), but the model explained only between 3.1% (Cox and Snell  $R^2$ ) and 4.5% (Nagelkerke  $R^2$ ) of the variance; it correctly classified 74.2 % of cases. By inspecting the “Exp (B)” of Table 4.7, it was possible to identify that “Nationality” was a significant predictor for how “Growling” is interpreted regarding aggressive behaviour: North Americans and Other nationalities were 1.5 and 1.8 times, respectively, more likely to consider this behaviour as indicative of aggressive behaviour than Europeans.

f) Snapping

Ten out of the 68 variables were retained. The final model significantly distinguished between the groups ( $\chi^2 (10) = 516.762, p < .0001$ ), and the model explained between 26.1% (Cox and Snell  $R^2$ ) and 35.7% (Nagelkerke  $R^2$ ) of the variance; correctly classifying 77.3% of cases. By inspecting the “Exp (B)” of Table 4.7, it was possible to identify that “Nationality” was a significant predictor for how “Snapping” is interpreted regarding aggressive behaviour: North American and Other nationalities were 2.5 and 1.9 times, respectively, more likely to consider this behaviour as indicative of aggressive behaviour than Europeans. However, Japanese” associated with 0.2 times less likely to consider this behaviour as an indicative of aggressive behaviour than Europeans. The variable “Ethnic group: Asians and other group” associated with 0.5 times less likely to consider this behaviour as indicative of aggressive behaviour than Caucasians.

#### g) Biting

Eight out of the 68 variables were retained. The final logistic regression model significantly distinguished between the groups ( $\chi^2(5) = 175.793, p < .0001$ ), but the model explained only between 9.8% (Cox and Snell  $R^2$ ) and 16.8% (Nagelkerke  $R^2$ ) of the variance; it correctly classified 84.1% of cases. By inspecting the “Exp (B)” of Table 4.7, it was possible to identify that “Nationality” was a significant predictor for how “Biting” is interpreted regarding aggressive behaviour: North American and Other nationalities were 4.7 and 2.8 times, respectively, more likely to consider this behaviour as indicative of aggressive behaviour than Europeans. The variable “Ethnic group: Other group” associated with 0.5 times less likely to consider this behaviour as indicative of aggressive behaviour than Caucasians.

#### h) Lunging

Eight out of the 68 variables were retained. The final logistic regression model significantly distinguished between the groups ( $\chi^2(11) = 305.139, p < .0001$ ). The model explained between 16.4% (Cox and Snell  $R^2$ ) and 22.3% (Nagelkerke  $R^2$ ) of the variance and correctly classified 69.6% of cases. By inspecting the “Exp (B)” of Table 4.7, it was possible to identify that “Nationality” was a significant predictor for how “Lunging” is interpreted regarding aggressive behaviour: North American and Other nationalities were 3 and 2.6 times, respectively, more likely to consider this behaviour as indicative of aggressive behaviour than Europeans. However, Japanese were 0.43 times less likely to consider this behaviour as an indicative of aggressive behaviour than Europeans. The variable “Ethnic groups: Other group” associated with 0.5 times less likely to consider this behaviour as indicative of aggressive behaviour than Caucasians.

#### i) Barking

Five out of the 68 variables were retained. The final logistic regression model significantly distinguished between the groups ( $\chi^2(5) = 64.415, p < .0001$ ), but the model explained only between 3.7% (Cox and Snell  $R^2$ ) and (Nagelkerke  $R^2$ ) 5.4% of the variance, but correctly classified 73.0% of cases. By inspecting the “Exp (B)” of Table 4.7, the variables (no reference category), “Attitude towards aggression: Verbal or indirect expressions”, “Source of knowledge: General media” and “Source of knowledge: IT” were more likely to consider this behaviour as indicative of aggressive behaviour as an option of barking. “Attitude towards aggression: Physical contact and loud expressions” and “Type of information sought: What dog is like” were less likely to consider this behaviour as indicative of aggressive behaviour.

#### 4.3.1.3. Which signals people think may predict that a dog may bite

The distribution of the total respondents' scores for the 30 items related to the signalling of a potential dog bite indicated that all signs typically considered to be overtly aggressive, i.e. snarling, baring teeth, body tension, and growling, showed higher scores (Figure 4.1).

After MRA was performed, 15 of the 68 variables were retained, which explained 23% of the variance in the total scores. The results showed that these 15 variables significantly predicted people's predictive dog bite signals,  $F(15, 17) = 33.928, p < .0005$ .

"Positive reinforcement", "High level of experience with dogs" and "Physical contact and loud expressions" showed important predictors (Beta coefficient  $>0.1$ ) and it was related to the higher score for predictive dog bite signals.

"Japanese" and "country of residence: Europe" showed negative regression weights (Beta coefficient  $<0.1$ ), indicating both were related to the lower score for predictive dog bite signals.

Figure 4. 1. The distribution (percentage) of the total respondents scores for 30 predictive dog bite signals

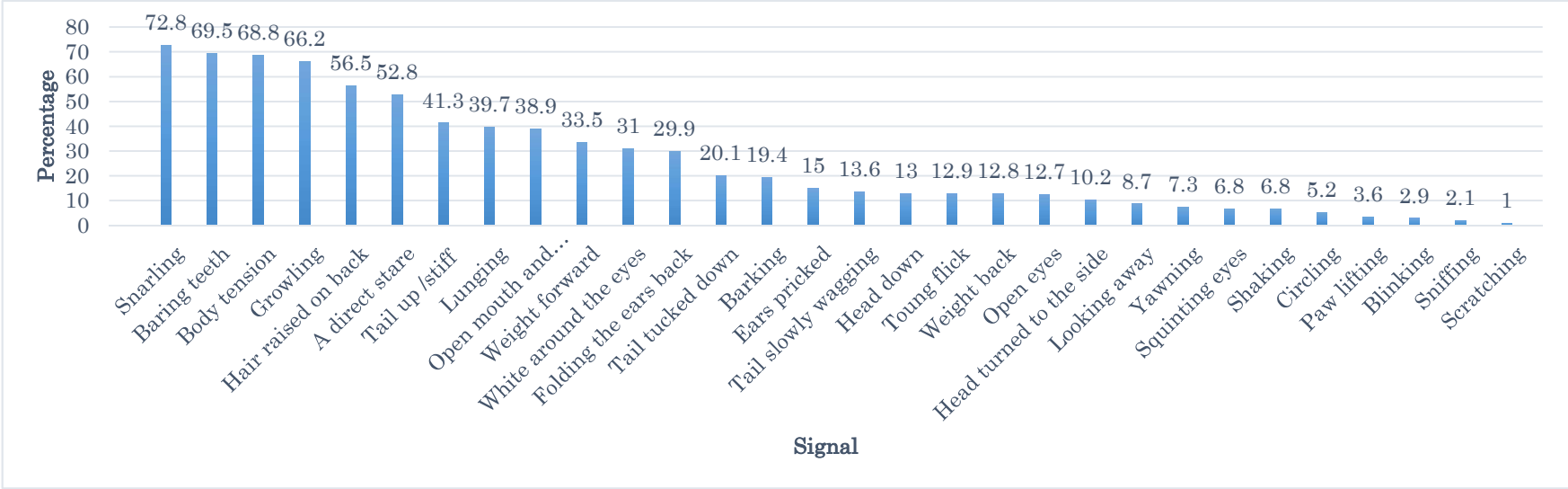


Table 4 8. Variables remaining in final stepwise multiple regression analysis of the total scores for prediction of dog bite signals.

Variable	Beta	t	Sig
Nationality: Japanese	-.211	-6.831	.000
Country of residence: Europe	-.167	-6.139	.000
Training method: positive reinforcement	.140	5.754	.000
High level of experience with dogs	.112	4.736	.000
Attitude towards aggression: physical contact and loud expressions	.114	5.223	.000
Type of information sought: What dog is like	.075	2.563	.010
Age group: 18-29	.089	3.964	.000
Type of home: Apartment	-.085	-3.792	.000
Country of residence: Other countries	.082	3.499	.000
Work status: other	.059	2.747	.006
Age group: over 60	-.058	-2.613	.009
Source of knowledge: Internet	-.057	-2.344	.019
Training method: positive punishment	.062	2.698	.007
Attitude towards HDAB: behaviour is not acceptable, but do not know what to do	-.066	-2.647	.008
Source of knowledge: personal contact	.058	2.101	.036

#### 4.3.2. Perception of causes of HDAB

The most popular cause/s within the top three ranks for the three scenarios were used for the analysis. This was determined from the most frequently chosen answer from the three scenarios (Appendix Table 4.2, 4.3, 4.4):

- Scenario A 2 items were selected as they both showed much higher popularity than the others
- Scenario B: - 1 item selected consistently more than others
- Scenario C: - 1 item selected consistently more than others

The results of LRA using a binary outcome score for the three scenarios were as follows:

Scenario A. An owner is walking with their dog on a lead in a park and an unfamiliar person approaches the dog. The dog growls and snaps at him.

- i. Most frequently chosen answer: The dog is feeling threatened by the person (Appendix,

Table 4. 2, N=1,532 / 1778).

Ten (Only variables which showed significant different in the model were described in Table 4.9) of the 68 variables were retained to determine the important predictors of this choice. The final model was significantly able to distinguish between the groups ( $\chi^2(10) = 123.031, p < .0005$ ). It explained only between 6.9% (Cox & Snell R Square) and 12.7% (Nagelkerke R<sup>2</sup>) of the variance, but correctly classified 86.9% of cases. No reference category, “Physical contact and loud expressions” and “Practical care: Food or health” and (Table 4.9) increased the likelihood of selecting this choice. “Relationship: Living with parents / guardian” reduced the likelihood of this response compared to “Living with an adult partner in a long term relationship”, the ethnic group response “Other” was less likely to select this option than “Caucasians”. No reference category, “Attitude towards aggression: verbal or indirect expressions”, “Source of knowledge: General Media”, and “Basic level of experience with dogs were also less likely to select this option (Table, 4.9).

Table 4 9. Variables remaining in final stepwise logistic regression model for the most frequently chosen answer: “The dog is feeling threatened by the person”. \*Only variables that had significant difference are shown. \*RC=Reference category

Variable	Wald	Sig	Odds ratio (Exp B)	95% CL	
				Lower	Upper
Relationship : RC (Living with an adult partner in a long term relationship) Living with parents / guardian	9.826	.002	.538	.365	.793
Ethnic : RC(Caucasian) Other	8.946	.003	.479	.296	.776
Attitude towards aggression: physical contact and loud expressions	38.568	.000	1.070	1.048	1.094
Attitude towards aggression: verbal or indirect expressions	30.539	.000	.927	.902	.952
Type of information sought: Practical Care: Food / Health	21.317	.000	1.111	1.063	1.163
Source of knowledge: General Media	5.701	.017	.957	.923	.992
Basic level of experience with dogs	4.015	.045	.730	.537	.993



- ii. The second most frequently chosen answer: The dog is afraid of the person (Appendix, Table 4. 2, N=1,400 /1778)

Eleven (Only variables which showed significant difference in the model were described in Table 4.9) of the 68 variables were retained to determine the important predictors of this choice.

The final model was significantly able to distinguish between the groups ( $\chi^2$  (9) =64.157,  $p < .0005$ ). It explained only between 3.7% (Cox & Snell R Square) and 5.7% (Nagelkerke R<sup>2</sup>) of the variance in the second most chosen answer and correctly classified 79.1% of cases. “Relationship: Living without an adult partner” was 1.9 times more likely to select this choice compared to “Living with an adult partner in a long term relationship” and “Country of residence: North America” was 1.4 times and “Country of residence: Japan” was 2 times more likely to select this choice compared to than “Europe”. No reference category, “Attitude towards HDAB: Not making matters worse and trying to move away from it”, “The role of dog: being a non-human family member who provides physical and psychological support” also increased the likelihood of selecting this choice. “Training method: positive punishment” reduced the likelihood of selecting this choice (Table 4. 10).

Table 4 10. Variables remaining in final stepwise logistic regression model for second most frequently chosen response: “The dog is afraid of the person”. \*Only variables that were important predictors are shown. \*RC=Reference category

Variable	Wald	Sig	Odds ratio (Exp B)	95% CL for EXP B	
				Lower	Upper
Relationship : RC (Living with an adult partner in a long term relationship) Living without an adult partner	15.674	.000	1.978	1.411	2.772
Country of residence : RC (Europe) North America	4.958	.026	1.419	1.043	1.931
Country of residence : Japan	20.142	.000	2.018	1.485	2.742
Attitude towards HDAB: not making matters worse and trying to move away from it	8.202	.004	1.185	1.055	1.332
The role of dog : being a non-human family member who provides physical and psychological support	12.859	.000	1.265	1.113	1.439
Training method: positive punishment	5.988	.014	.872	.781	.973

Scenario B. A dog is in a fenced garden or in a house and sees someone outside (i.e. the postman, or a delivery person). The dog dashes up to the boundary and barks at the person until the person goes away

The top most frequently chosen answer: The dog is feeling threatened by the person (Appendix, Table 4.3, N=1,321 / 1778).

Eight (Only variables which showed significant difference were described in Table 4.11) of the 68 variables were retained to determine the important predictors of this choice.

The final model was significantly able to distinguish between the groups ( $\chi^2(8) = 51.716, p < .0005$ ). It explained between 3.0% (Cox & Snell R Square) and 4.4% (Nagelkerke R<sup>2</sup>) of the variance in the top answer and correctly classified 74.6% of cases. “Country of residence: Japan” was associated with a 2.2 times increased selecting this choice compared to “Europe”. “Area: Suburban” increased the likelihood of this response compared to “Urban”. “Training method: positive reinforcement (no reference category)” also increased the likelihood of this response. Only “Attitude towards aggression: agreement with verbal correction (no reference category)” reduced the likelihood of selecting this choice (Table, 4.11).

Table 4 11. Variables remaining and model outputs for the final stepwise logistic regression model for the top answer: “The dog is feeling threatened by the person”. \*Only variables that had significant difference are shown. \*RC=Reference category

Variable	Wald	Sig	Odds ratio (ExpB)	95% CL for EXP B	
				Lower	Upper
Living environment: RC (Urban) : Suburban	4.661	.031	1.400	1.032	1.901
Country of residence: RC (Europe) Japan	28.920	.000	2.258	1.678	3.038
Attitude towards aggression: using verbal correction	8.206	.004	.948	.915	.983
Training method: positive reinforcement	6.003	.014	1.124	1.024	1.235

Scenario C. An owner is using a toy to play a game of “tug of war” with his/her pet dog. The dog starts to growl and it bites the owner’s hand when the owner tries to pull the toy away

The top most frequently chosen answer: The dog is frustrated by the prospect of losing something (Appendix, Table, 4.4, N=1,305 / 1778).

Eight of the 68 variables were retained to determine the important predictors of this choice.

The final model was significantly able to distinguish between the groups ( $\chi^2(8) = 133.349, p < .0005$ ). It explained between 7.5% (Cox & Snell R Square) and 11.0% (Nagelkerke R<sup>2</sup>) of the variance in and correctly classified 75.1% of cases. No reference category, “The role of dog: being a non-human family member who provides physical and psychological support”, “Training method: positive reinforcement”, “The role of dog: characteristics for selection”, “Attitude towards aggression: using physical punishment”, and “Attitude towards aggression: physical contact and loud expressions” increased the likelihood of this choice. “English and Japanese language respondents: Japanese” 0.5 times reduced the likelihood of this response compared to “English” and “Attitude towards aggression: verbal or indirect expressions (no reference category)”, “using verbal correction” reduced the likelihood of selecting this choice (Table, 4.12).

Table 4 12. Variables remaining and model output for the final stepwise logistic regression model for the top answer: “The dog is frustrated by the prospect of losing something”. \*RC=Reference category

Variable	Wald	Sig	Odds Ratio (Exp B)	95% CL for EXP (B)	
				Lower	Upper
English and Japanese language respondents RC (English): Japanese	15.211	.000	.532	.387	.730
Attitude towards aggression: physical contact and loud expressions	18.886	.000	1.040	1.022	1.059
Attitude towards aggression: verbal or indirect expressions	13.266	.000	.960	.940	.982
Attitude towards aggression: using physical punishment	10.099	.001	1.050	1.019	1.082
Attitude towards aggression: using verbal correction	6.420	.011	.952	.916	.989
The role of dog: being a non-human family member who provides physical and psychological support	3.914	.048	1.134	1.001	1.284
The role of dog: characteristics for selection	10.584	.001	1.131	1.050	1.219
Training method: positive reinforcement	6.184	.013	1.132	1.027	1.249

#### 4.3.3. Perception of emotion and motivation of dogs in circumstances

After the assessment of photograph (g), it was not used for the analysis of emotion as the experts felt there was some ambiguity (see 4.2.1.2. Questionnaire and model design, III. People's perception of HDAB).

Japanese language respondents' assessment for emotion and motivation in photograph (c) showed high disagreement with the experts (both over 80%), while English language respondents showed a more ambiguous response (nearly 50% agreement and 50% disagreement with experts). The number and population of respondents in agreement with the experts were described in Table 4.13. The distribution of total score 0 – 9 for emotion and total score 0 – 10 for motivation and the results of MRA were described as follows:

Table 4 13. Summary of experts' and participants' assessment of emotion for 10 photographs. Photograph g) excluded from emotion in analysis.. \*Note in photograph c) the participants disagreed with the experts. \* Quite a strong consensus group (over 80%) =bold red, ambiguous level of consensus (30-60%, including closed %) = italic letters.

Emotion and motivation frequencies	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)
<b>Emotion Experts assessment</b>	Negative	Negative	Negative	Negative	Negative	Negative	void	Negative	Negative	Negative
<b>English</b>	Positive: N=83 (7.2%) Negative: N=1603 (92.8%)	Positive: N=342 (29.8%) Negative: N=804 (70.2%)	Positive: N=574 (50.1%) Negative: N=572 (49.9%)	Positive: N=206 (18%) Negative: N=940 (82%)	Positive: N=79 (6.9%) Negative: N=1,067 (93.1%)	Positive: N=353 (30.8%) Negative: N=793 (69.2%)		Positive: N=224 (19.5%) Negative: N=922 (80.5%)	Positive: N=27 (2.4%) Negative: N=1,119 (97.6%)	Positive: N=274 (23.9%) Negative: N=871 (76.1%)
<b>Japanese</b>	Positive: N=286 (45.3%) Negative: N=346 (54.7%)	Positive: N=94 (14.9%) Negative: N=538 (85.1%)	Positive: N=524 (82.9%) Negative: N=108 (17.1%)	Positive: N=50 (7.9%) Negative: N=582 (92.1%)	Positive: N=9 (1.4%) Negative: N=623 (98.6%)	Positive: N=309 (48.9%) Negative: N=323 (51.1%)		Positive: N=245 (38.8%) Negative: N=387 (61.2%)	Positive: N=6 (9%) Negative: N=626 (99.1%)	Positive: N=269 (43.6%) Negative: N=363 (57.4%)
<b>Motivation Experts assessment</b>	Withdrawal	Withdrawal	Withdrawal	Withdrawal	Withdrawal	Withdrawal	Maintain	Withdrawal	Withdrawal	Maintain
<b>English</b>	Maintain N=51 (4.5%) Withdrawal N=1,095 (95.5%)	Maintain N=129 (11.3%) Withdrawal N=1,117 (88.7%)	Maintain N=578 (50.4%) Withdrawal N=568 (49.6%)	Maintain N=124 (10.8%) Withdrawal N=1022 (89.2%)	Maintain N=90 (7.9%) Withdrawal N=1,056 (92.1%)	Maintain N=376 (33.8%) Withdrawal N=770 (66.2%)	Maintain N=878 (76.6%) Withdrawal N=268 (23.4%)	Maintain N=180 (15.7%) Withdrawal N=966 (84.3%)	Maintain N=19 (1.7%) Withdrawal N=1,127 (98.3%)	Maintain N=883 (77.1%) Withdrawal N=263 (22.9%)
<b>Japanese</b>	Maintain N=232 (36.7%) Withdrawal N=400 (63.3%)	Maintain N=68 (10.8%) Withdrawal N=584 (89.2%)	Maintain N=510 (80.7%) Withdrawal N=122 (19.3%)	Maintain N=22 (3.5%) Withdrawal N=610 (96.5%)	Maintain N=9 (1.4%) Withdrawal N=623 (98.6%)	Maintain N=308 (48.7%) Withdrawal N=324 (51.3%)	Maintain N=424 (67.1%) Withdrawal N=208 (32.9%)	Maintain N=174 (27.5%) Withdrawal N=458 (72.5%)	Maintain N=8 (1.3%) Withdrawal N=624 (98.7%)	Maintain N=480 (75.9%) Withdrawal N=152 (24.1%)

#### 4.3.3.1. Emotion

The respondents' total score for agreement with experts for emotion is as follows (Table 4.14).

Table 4 14. The respondents' total score for agreement with experts for Emotion

Total score	Frequency	Percent
Score 0-9		
.00	2	.1
1.00	3	.2
2.00	8	.4
3.00	23	1.3
4.00	82	4.6
5.00	212	11.9
<b>6.00</b>	<b>377</b>	<b>21.2</b>
<b>7.00</b>	<b>486</b>	<b>27.3</b>
<b>8.00</b>	<b>357</b>	<b>20.1</b>
9.00	227	12.8
Total	1777	99.9
Missing	1	.1
Total	1778	100.0

13 variables remained in the MRA model explaining 20.5% of the variance in the total scores for agreement with the experts as to the dominant emotion in the photos. “English and Japanese language respondents”, “High level of experience with dogs” and “Source of knowledge: Personal contact” showed important predictors, “Source of knowledge: Personal contact” (Beta coefficient >0.1) and it was related to the higher score for agreement with the experts as to the dominant emotion (Table, 4.15).

Table 4 15. Variables remaining and model output for the final stepwise multiple regression model for emotion

Variable	Standard- ized Coeffi- cients Beta	t	Sig.
English and Japanese language respondents	.202	6.978	.000
High level of experience with dogs	.149	6.222	.000
Using with verbal correction	-.088	-3.695	.000
Source of knowledge: Personal contact	.147	4.694	.000
Attitude towards HDAB: behaviour is not acceptable, but do not know what to do	-.098	-3.813	.000
Attitude towards HDAB: not making matters worse and trying to move away from it	.075	3.215	.001
The role of dogs: being a non-human family member who provides physical and psychological support	.059	2.710	.007
Attitude towards aggression: Verbal or indirect expressions	.068	2.689	.007
Training method: positive reinforcement	.068	2.749	.006
Area lived: Semi urban	.049	2.245	.025
Type of information sought: practical care Food /Health	-.077	-2.557	.011
House structure: living with parents and guardian	.051	2.278	.023
Male or female	-.044	-1.983	.048

#### 4.3.3.2. Motivation

The respondents' total score for agreement with experts for emotion is as follows (Table 4.16).

Table 4 16. The respondents' total score for agreement with experts for Motivation

Total score	Frequency	Percent	
Score 0-10	3.00	2	.1
	4.00	15	.8
	5.00	46	2.6
	6.00	183	10.3
	<b>7.00</b>	<b>410</b>	<b>23.1</b>
	<b>8.00</b>	<b>509</b>	<b>28.6</b>
	<b>9.00</b>	<b>455</b>	<b>25.6</b>
	10.00	158	8.9
Total	1778	100.0	

8 variables remained in the MRA model explaining 16.1% of the variance in the total scores for agreement with the experts as to the dominant motivation in the photos. “English and Japanese language respondents” and “High level of experience with dogs” showed important predictors (Beta coefficient >0.1) and it was related to the higher score for agreement with the experts as to the dominant motivation (Table, 4.17).

Table 4 17. Variables and model output remaining in final stepwise multiple regression model for motivation

Variable	Standardized Coefficients Beta	t	Sig.
English and Japanese language respondents	.176	4.199	.000
Source of knowledge: Personal contact	.095	3.951	.000
High level of experience with dogs	.107	4.612	.000
Using with verbal correction	-.080	-3.407	.001
HDAB behaviour problem: Yes No	.060	2.716	.007
Attitude towards HDAB: behaviour is not acceptable, but do not know what to do	-.060	-2.336	.020
Area lived: Urban	-.049	-2.185	.029
Nationality: Caucasian	.082	2.016	.044

#### 4.3.4. Important elements of the prevention of HDAB

The three most frequently chosen answers were (Table 4. 18):

- 1: d) Understanding the reasons why dogs develop aggressive behaviour,
- 2: c) Opportunities to socialize dogs with people from an early age, and
- 3: e) Learning to recognize/read canine body language, signalling and emotion.

861(48.4%) respondents picked all three of these as their top three choices, 881 (49.4%) had two of these and 36 (2%) had just one of these (Appendix, Table 4. 7).

A binary LRA was used to identify the significant factors contributing to whether or not an individual gave all three of the most frequent choices or not. Eleven (Only variables which showed significant difference were described in Table 4.19) of the 68 variables were retained to determine the important predictors of all three choices. The final model significantly distinguished the groups ( $\chi^2 (11) = 141.467, p < 0.001$ ). It explained only between 7.9% (Cox & Snell R Square) and 10.6% (Nagelkerke R<sup>2</sup>) of the variance in and correctly classified 61.1% of cases. “Are lived: Semi-urban areas” 1.4 times increased the likelihood of selecting all three choices compared to “Urban”. No reference category, “Attitude towards aggression: prefer take thing away from the dog”, “Attitude towards HDAB: not making matters worse and trying to move away from it”, “The role of dog: being a non-human family member who provides physical and psychological support” and “Training: positive reinforcement” also increased the likelihood of this response. “Numbers of over 12 years old: one” reduced the likelihood of selecting all three choices compared to “None”. No reference category, “Attitude towards aggression: using physical punishment” and “Attitude towards HDAB: behaviour is not acceptable but do not know what to do” also reduced the likelihood of selecting all three choices (Table 4.19).



Table 4 18. The distribution of the participants who selected the top three for the items of the important elements for the prevention of HDAB

N (1778)	d) Understanding the reasons why dogs develop aggressive behaviour	c) Opportunities to socialize dogs with people from an early age	e) Learning to recognize/read canine body language, signalling and emotion	b) Learning training methods to control your dog	f) Other	a) Preventing the dog having contact with people
Frequencies	<b>1554.00</b>	<b>1490.00</b>	<b>1337.00</b>	847.00	61.00	39.00
Percentage	<b>87.4</b>	<b>83.8</b>	<b>75.2</b>	47.6	3.4	2.2

Table 4 19. Variables and model output from the final stepwise logistic regression model for the important elements of the prevention of HDAB

\* Only variables that had significant difference are shown. PC=reference category

Variable	Wald	Sig.	Odds ratio Exp(B)	95% C.I.	
				Lower	Upper
Area lived: PC (Urban)	7.939	.047			
Semi-urban	7.173	.007	1.446	1.104	1.894
Number of over 12 years old: RC (None)	6.171	.046			
One	4.310	.038	.646	.428	.976
Attitude towards aggression : Using physical Punishment	6.399	.011	.969	.945	.993
Attitude towards aggression: Prefer take thing away from the dog	5.927	.015	1.049	1.009	1.090
Attitude towards HDAB: Not making matters worse and trying to move away from it	23.100	.000	1.278	1.156	1.413
Attitude towards HDAB: Behaviour is not acceptable but do not know what to do	4.953	.026	.894	.810	.987
The role of dog: being a non-human family member who provides physical and psychological support	14.184	.000	1.233	1.106	1.376
Training method: Positive reinforcement	9.975	.002	1.139	1.051	1.235

#### 4.3.5. Prioritised methods for the modification of HDAB

The three most frequently chosen answers were (Table 4. 20):

- 1: g) Competency or expertise of the person who will advise me,
- 2: e) A method that does not cause stress to the dog (a kind way), and
- 3: f) A method that does not damage the relationship between the dog and its owner.

729 (41%) respondents chose all three of these as their top three choices, 689 (38.8%) had two of these and 304 (17.1%) had one of these (Appendix, Table 4. 8).

A binary LRA was used to identify the significant factors contributing to whether or not an individual gave all three of the most frequent choices or not. Twelve (Only variables which showed significant difference were described in Table 4.19) of the 68 variables were retained to determine the important predictors of all three ranks. The final model significantly distinguished the groups ( $\chi^2(12) = 455.053, p < 0.001$ ), It explained between 23.4 % (Cox & Snell R Square) and 31.5 % (Nagelkerke R<sup>2</sup>) of the variance, and correctly classified 72.4 % of cases. “Area lived: Semi-urban” 1.4 times increased the likelihood of this response compared to “Urban” and “Gender: female” 1.5 times increased the likelihood of this response compared to “Male”. No reference category, “Attitude towards aggression: prefer take thing away from children”, “Attitude towards HDAB: Not making matters worse and trying to move away from it”, “The role of dogs: being a non-human family member who provides physical and psychological support”, “Source of knowledge: personal contact” and “Training method: positive reinforcement” also increased the likelihood of selecting all three choicest

No reference category, “Collectivism”, “Attitude towards aggression: using physical punishment with dogs” and “Training method: positive punishment” reduced the likelihood of selecting all three choices (Table, 4.21).

Table 4 20. The distribution of frequency for the participants who selected top three for the items (order from top three answers) of the priority methods for the modification of HDAB

N (1778)	g) Competency or expertise of the person who will advise me	e) A method that does not cause stress to the dog (a kind way)	f) A method that does not damage the relationship between the dog and its owner	d) A method that will quickly resolve the behaviour problem	c) A method that helps the dog to easily obey its owner	b) A method that will easily control the dog	h) Other	a) An inexpensive method
Frequencies	<b>1335</b>	<b>1315</b>	<b>1219</b>	513	485	281	118	65
Percentage	<b>75.1</b>	<b>74</b>	<b>68.6</b>	28.9	27.3	15.8	6.6	3.7

Table 4 21. Variables and model output from the final stepwise logistic regression model for the priority methods for the modification of HDAB

\* Only variables that had significant difference are shown.

Variable	Wald	Sig.	Odds ratio (ExpB)	95% C.I. for ExpB	
				Lower	Upper
Area lived: PC (Urban)	8.189	.042			
Semi-urban	5.118	.024	1.416	1.048	1.914
Gender: PC (Male)	4.153	.042	1.460	1.015	2.100
Female					
Collectivism	12.059	.001	.933	.897	.970
Attitude towards aggression: prefer take thing away from children	32.953	.000	1.157	1.101	1.216
Attitude towards aggression: using physical punishment with dogs	23.768	.000	.938	.914	.962
Attitude towards HDAB: Not making matters worse and trying to move away from it	39.774	.000	1.470	1.304	1.658
The role of dogs: being a non-human family member who provides physical and psychological support	10.068	.002	1.219	1.079	1.377
Source of knowledge: personal contact	6.400	.011	1.031	1.007	1.056
Training method: positive reinforcement	6.333	.012	1.127	1.027	1.237
Training method: positive punishment	41.710	.000	.658	.580	.747

## 4.4. Discussion

### 4.4.1. Perception of communicative signals of aggressive behaviour

Less than half the participants reportedly paid attention to all five types of communicative signal in the survey. Body posture and vocalizations, as components of the dog's signalling, were used most often to determine aggressive behaviour. States of arousal, such as body tension or hair raised on the back were also often recognized as aggressive and predictive signs for biting (Figure 4.1). As hypothesized, the respondents considered more overt signs to be aggressive, e.g. snarling, baring teeth, growling, biting than subtle and mild signs, e.g. staring or lunging (Table 4.6, Figure 4.1). To understand communicative signals fully, it is important to evaluate the specific context in which each is performed (Mills *et al*, 2013; Mills *et al*, 2014). Snapping and nipping were selected at a lower percentage than the other overt signs as being aggressive. These results may indicate that people perceive vocalization signals as being more intimidating than only visual signals. A previous study (Molnár *et al*, 2010) found that both unsighted humans (with or without visual experience) and sighted humans have a similar ability to categorize emotional barks of dogs, particularly those that are fearful and aggressive, across different contexts. Pongracz *et al* (2005) also found that people were able to categorise dog barking in the situations and there was no difference between people who have previous experience of the dog breed or of owning a dog to classify the dog barks. They also found (Pongracz *et al*, 2006) that people were able to categorise low pitched barks as aggressive, high pitched barks as fearful or desperate without aggression. Other studies suggested that human adults using face perception mainly use the left visual field resulting in their inspection of the right side of the viewee's face first (Mertens *et al*. 1993; Philips and David 1997; Butler *et al.*, 2005; Bulter and Harvey 2006; Guo *et al.*, 2009). This finding may indicate the limitation of human's biological function to view a dog's facial expression. People therefore have an auditory ability to distinguish a dog's emotion, and the results of the present study further suggests that humans perceive not only visual signs but also auditory signs when they assess HDAB.

Interestingly, there were a number of respondents (N=286, 16.1%) who perceived "Biting" as being unlikely to be linked with aggressive behaviour. These people may consider that aggressive behaviour is part of the natural behaviour of a dog, or that it may be just representing the behaviour as individual characteristic. Why some people consider that "Biting" is not likely to be linked to aggressive behaviour deserves further attention.

People who have a high level of experience with a dog and people who live in North America were more likely to pay attention to all five communicative signal regions and context. People who have a high level of or more experience seem to have more knowledge about a dog's behaviour (Peachy, 1993; Jagoe and Sepell, 1996; Bahlig-Pieren and Tuner, 1999; Kerswell *et al*, 2009; Costa *et al*, 2014; Fidler *et al*, 2015). Kujala *et al* (2012) studied the brain activity difference between experts and non-experts of dog social behaviour based on their observation of humans or dogs either interacting with, or facing away from a conspecific. The study revealed that the brain activity of dog experts distinguished body postures' similarity in dogs and humans more than non-experts. The results of the present study support these findings.

People who live in North America and people who live in Japan were more likely to consider this behaviour as an indicative of aggressive behaviour than people who live in Europe for the overt signs of snarling and baring teeth. However, the Japanese were less likely to select "likely" for nipping, staring, snapping and lunging; in contrast, North Americans were more likely to select "likely" for these signals. The ethnic group; Asian was also less likely to select "likely" for snapping. These results indicate that North Americans perceive both overt and mild signs as being aggressive. On the other hand, Japanese seem less likely to perceive mild signs as being aggressive. Such different perceptions for aggressive behaviour might be related to unnoticed signals and/or a lack of knowledge about dog's behaviour, or people's attitude towards aggression. Japanese dog owners may not have the knowledge to recognise that "staring" can include a threatening message, and/or they may perceive nipping, snapping and lunging more as play behaviours perhaps without knowing these signals can develop further into more overtly aggressive behaviour. This might be the product of the lack of information about causes and indicators of aggressive behaviour which was noted in popular media (Chapter 2) and science literature (Chapter1). Within people's attitude towards aggression, there are differences in the degree of justification across different countries for physical aggression and mild aggression in different situations (Ramirez *et al*, 2011). Ramirez and colleagues noted that physical aggression in defensive situations was justified more by American students than by Japanese and Spanish students. Japanese people justified passive aggression less than Europeans, and justified aggressive acts in consequences of emotional agitation less often than Spanish people. From these results, Americans seem to justify any physical aggression more than other countries. In other words, aggression may often occur in their life. Therefore, this attitude of North Americans may cause them to regard a wider range of behavioural signs as being aggressive in dogs, or they may readily label certain behaviours as aggressive subjectively. On the other hand, Japanese people had

lower levels of justification for both physical and mild aggression than other countries in previous studies. In Japanese culture, to not show one's feelings is considered an aspect of Japanese virtue, and a picture of Japanese culture (Lee, 2018). Therefore, aggression may not be commonly recognised or acknowledged in the life of most Japanese people, i.e., they may be sensitive to overt signs, but they may not recognise what are commonly considered mild or subtle signs of aggression. In order to deliver systematic consistent information on assessing HDAB while adjusting for individual culture, it is important to further investigate whether people's perception of communicative signals is influenced by their knowledge or attitude towards aggression amongst other factors.

#### 4.4.2. Perception of causes of HDAB

The participants' first or second choice answers were the items, c) the dog was afraid of the person and f) the dog is feeling threatened by the person in the three scenarios. The result indicated that people are likely to perceive aggressive behaviour often as a dog's being "fearful" and dogs responding to a threat. The result supports the finding of the popular media survey in Chapter 2, in which both UK and Japanese popular media described a dog's HDAB as being often caused by "fear", with other emotions such as frustration, seeking (desire), and play (joy, excitement) being rarely considered. People's perception towards the causes of HDAB may be influenced by the contexts presented in popular media. The result also supports a previous study (Tami and Gallagher, 2009) which found that "fear" related behaviour in dogs was one of the most recognised behaviour by experienced and inexperienced people. People also perceived a dog's "frustration" as a potential cause of HDAB in common situations, even if it was not described commonly than fear in the popular media. Further investigation might usefully try to identify the contexts which people perceive as fear or frustration inducing for dogs.

Demographics inevitably related to general culture, and to this end it is worth noting that people in North America and Japan were more likely to refer to "fear" and "threat" in common circumstances than those in Europe. Particularly, respondents from Japan were over 2 times more likely to select c) "The dog is afraid of the person" in Scenario A and B than those from Europe. This result may be affected by the available information in the media, which mainly introduces "fear" as the cause of behaviour problem. In Scenario C, Japanese language respondents were not only less likely to select i) "the dog is frustrated by the prospect of losing something" but much less likely to select this than English language respondents. (Appendix, Table 4.5), Some Japanese

respondents did select item i) as a first choice, but it was a very similar proportion to those that chose item c) “the dog is challenging the person” (Appendix, Table 4.6). This result may indicate that Japanese respondents readily perceive growling and biting behaviour as the dog being challenging towards their owner. As Chapter 2 described, internet sites and books in Japan described, more so than in English equivalents, that a dog’s aggressive behaviour is caused by dominance. The consideration of Japanese people for “dominance” behaviour might be associated with the aspect of high power distance cultures (Hofstede, 1980; Hofstede, 2011) which still exist in Japan (Duboscq,2016). In Japan, historically, people respect the authority of a social hierarchy (Tujimura, 1987), e.g. respect the elderly and high status people. The information in the media may make Japanese people label HDAB as more dominance-related or restrict their perception of the range of potential causes of HDAB. In the elements of dog management culture relating to the living environment: suburban respondents were more likely to select cause g) “the dog is feeling threatened by the person” in Scenario B. Perhaps people who live in suburban areas may be more likely to have their own garden and more people passing close by than semi-urban or rural dwellings. Therefore, they may have more instances when they see dog displays in this context and their answers may be influenced by their experience.

#### 4.4.3. Perception of emotion and motivation of dogs

Japanese language respondents showed high disagreement with the experts in photo c) for both emotion and motivation and English language respondents showed great ambiguity in their evaluation of this image. Photo c) is considered to show that the dog is uncomfortable in the situation (negative emotion) and wants to be left alone (negative motivation). Body signals of the dog such as “submissive” posture, body tense, tail down, ears folded back, and tongue flicking express the dog’s emotion and motivation. However, the majority of Japanese language respondents assessed emotion and motivation as positive. It can be considered that they may be labelling the dog as fawning over the owner as a positive submissive posture, and overlooking the subtle signs of conflict such as the tongue flick. Aggressive behaviour in dogs has been described in relation to a “ladder of aggression” (Shepherd, 2002) where a dog’s aggression escalates from mild or subtle expression, e.g. yawning, blinking, and lip licking to overt signs, e.g. growling, snapping, and biting and it is suggested that the recognition of the subtle behaviours including displacement behaviours is important (Mariti, 2012; Marti, 2017). Such behaviour also indicates that the dog is displaying its stress response (Beerda *et al* 1997; Aloff, 2018; Rooney *et*

*al.*,2009; Mariti, 2012). Therefore, in order to prevent any escalating aggressive behaviour and to avoid dogs being stress, it is important for people to recognize behavioural signs of stress and early warning signs (Mills *et al*, 2014, Mills *et al*, 2015, Mills and Westgrath, 2017). Photo f) also indicates the difference in perception of emotion and motivation between English and Japanese language respondents. The dog presents as staring (Shepherd, 2002), ears are back, body lowered, weight back, and tail down (Aloff, 2018; Rugaas 2006; Marti, 2017). The experts agreed with this being an expression of negative emotion and motivation. English language respondents tended to agree with the experts but Japanese respondents were ambiguous. Overall, in emotion, Japanese respondents showed ambiguity in relation to 4 images, whereas this occurred only once with English language respondents. In relation to motivation, Japanese respondents were ambiguous twice and English language respondents once. The results indicate that Japanese respondents are less consistent in their recognition of dog body language. These results are reinforced by the finding that for both the recognition of emotion and motivation, the highest impact factor was the language of respondents (English being higher). The second most important factor was the level of experience with dogs, which was positively correlated with the total scores for agreement. People who have a high level of experience with dogs may have more knowledge of communication signals than those with a basic level of experience with dogs (Peachy, 1993; Jagoe and Sepell, 1996; Bahlig-Pieren and Tuner, 1999; Kerswell *et al*, 2009; Costa *et al*, 2014; Fidler *et al*, 2015), thus it may also explain why such respondents showed better agreement for the identification of emotion and motivation.

#### 4.4.4. The important elements of the prevention of HDAB

The three most frequently chosen responses for the most important elements in the prevention of HDAB were: d) Understanding the reasons why dogs develop aggressive behaviour, c) Opportunities to socialize dogs with people from an early age, and e) Learning to recognize / read canine body language, signalling and emotion. These responses were chosen at similar frequencies and were much higher than the fourth most commonly chosen response, item b) Learning training methods to control your dog (Table 4.16). There were many people who selected two or three of these items in their top three. This result indicates that many people may consider that understanding their dogs and its behaviour is more important than learning the necessary skills to control their dogs. The results also indicate that people understand that socialisation is a one important element for the prevention of HDAB. Many previous studies suggest that socialisation is



important to the prevention of HDAB or aggressive behaviour towards dogs (Seksel, *et al*, 1999; Appleby *et al.*, 2001; HAPP, 2012; McMillan *et al*, 2013; Piorron *et al*, 2016). Therefore, people who understand the necessity of socialisation may pay more attention to a dog's emotion and motivation.

People who live in semi-urban areas were most likely to select the top three most frequently chosen responses. Semi-urban dwellers were also more likely to select the top 3 than those in urban areas. People who live in urban environments have more people in the locality and are potentially under greater social pressure, therefore they may have more experience of trying to control their dogs without time for careful observation of the dog's behaviour. On the other hand, people who live in semi-urban have more space, and a lower population density and so are presumably under less pressure, therefore they may have more time to consider the importance of understanding their dog's behaviour rather than having to immediately control their dogs without thought. However there may also be other demographic factors not explored here associated with living in these different environments such as general level of education. The living condition of living with a single child less than 12 years old was less likely to be associated with the top three responses than people who have no child. The relationship between the numbers of children people have and how they consider the prevention of HDAB have not been researched so far, therefore it may be a useful aspect to research as their view may be different, e.g., people who have children may be more objective for dog's behaviour or tend to learn dog's signals because they do not want their children to be hurt or they are less objective because they cannot concentrate on only their dogs..

#### 4.4.5. The priority methods for the modification of HDAB

The three most frequently chosen responses were g) Competency or expertise of the person who will advise me, e) A method that does not cause stress to the dog (a kind way), and f) A method that does not damage the relationship between the dog and its owner. These responses were chosen with similar frequencies and much higher than the 4<sup>th</sup> item; d) A method that will quickly resolve the behaviour problem (Table 4. 18). Many people selected two or three of these items within their three most common responses. The results indicate that the participants prioritize the quality of advice given to modify HDAB while maintaining what they perceive to be a good

relationship with their dog. This also shows that they try to take care of their dogs and that consideration for the dog's wellbeing affects their perception towards HDAB, regardless of nationality.

The results indicate that the participants who 'do not want to make matters worse' in instances of HDAB seem to strongly prioritize the quality of advice given to modify HDAB as well as maintaining a good relationship with their dogs. Their attitude shows the intention of doing something for the benefit of their dog, and this may influence the effort they make in evaluating HDAB. Females were also more likely to select the most frequently chosen answers. Females who seem to get more emotional support from their pets than from their husbands (Glam, 2018) and spend more time than males with their dogs (Sugita, 2001) may have more instances of having to interact with a dog exhibiting HDAB, therefore, they require good quality advice to modify HDAB while still intending to keep a good relationship with their dogs. As in the previous section, people in semi-urban living conditions were more likely to select the three most frequently chosen answers than "Urban" dwellers. People who live in semi-urban housing have more space, less population and are under less pressure to control their dogs, therefore they may spend more time than people in other areas considering what the best way is to keep a good relationship with their dogs. The use of positive punishment in training was associated with a reduction in the likelihood of selecting the most popular answers. People who use positive punishment may focus on controlling their dogs over the impact that the method may have on their relationship or interaction with their dogs. This attitude may indeed make HDAB worse (Arhant *et al.*, 2010 ; Ziv, 2017) and might be associated with owners lacking the observation skills to assess their dogs' emotional state. In the study of Chapter 3 (see Chapter 3.3.8), Japanese language respondents use more "positive punishment" methods than English language respondents and it may lead to Japanese dog owners' lack of observation of dogs' emotions. This result may support the argument. This relationship has not been investigated but may be useful to explore in future research.

#### **4.5. Conclusion**

Overall, the present study has found that more than half of the participants do not still pay full attention to the available elements of a dog's communication repertoire. As hypothesized, people were likely to recognise overt signs which have been introduced in the popular literature as

being indicative of aggressive behaviour but do not easily recognise a dog's more mild or subtle signs.

The differences in people's perception of HDAB were found to be particularly affected by nationality and country of residence, as well as level of experience with dogs, indicating potentially important cultural differences which have not been previously recognised. Japanese language respondents showed less recognition of the signs than English language respondents. In the next chapter, the responses to videos of HDAB are used to examine further whether people substantially recognise a dog's emotion and motivation in different circumstances and what cultural factors effect perception towards HDAB.

## **Chapter 5:**

### **Experimental survey: video assessment to investigate the recognition of emotional factors in English and Japanese language respondents**

This chapter describes the efficacy of intervention for the recognition of emotional factors and also what cultural factors affect their assessment in order to build a consistent framework for the assessment of the emotional basis of aggressive behaviour in dogs.

#### **5.1. Introduction**

The previous chapter described how people perceive HDAB and what cultural factors influenced people's perception of HDAB. The results of how people perceive HDAB indicated two important aspects. Firstly, people could assess clear overt signs better than the subtle signs. This is also potentially related to how people perceive HDAB which may be affected by people's lack of attention to a dog's signalling. Secondly, people also demonstrated limited ability to assess emotions such as fear, anxiety and frustration in just common circumstances in dogs. Cultural factors including nationality, country of residence and a high level of experience with dogs were likely to affect people's perception of HDAB. These findings seem to be influenced by inconsistent descriptions of the dog's motivation and emotion, in both the scientific literature and the popular media.

In order to investigate people's perception of HDAB and which cultural factors affect this, the current study focuses on how people assess a dog's emotion. This includes how they individually rated the dog's behaviour and what cultural factors affected the participants' assessment of emotions in different circumstances. It used a unique video assessment study as a treatment intervention applied to dog owners. This was aimed at introducing the key elements to effectively describe HDAB based on motivational and emotional concepts (Mills *et al.*, 2013; Mills *et al.*, 2014; Mills and Westgarth, 2017).

From the study in Chapter 4, people who have more experience handling dogs may have a better understanding of a dog's expressed emotion. Some previous studies (Peachy, 1993; Jagoe and Sepell, 1996; Bahlig-Pieren and Tuner, 1999; Kerswell *et al.*, 2009; Costa *et al.*, 2014; Fidler *et al.*, 2015) stated that people who have less experience, face communication difficulties with their

dogs. As the most popular companion animal (Statista, 2018), there has been an increased interest in studying emotion in dogs (Konok *et al.*, 2015). However, the investigation of people's assessment of dog's emotion based on Scherer's 4 components (2005) using a video experiment has not been previously conducted. Previous studies have only focused on how people viewed limited aspects of animal's emotions (including behaviour) without attempting a full scientific based investigation. This raises the following issues:

- A secondary emotion: owners claimed their dogs were jealous (Morris *et al.*, 2008), a guilty look was used as an owner's anthropomorphic description of their dog (Horowitz, 2009) and owners perceived a dog's behaviour as guilty in certain situations (Hecht *et al.*, 2012).
- Dog owners attributed a wide range of emotions to their dogs. However, they represented primary emotions, (e.g., fear, sadness, joy, disgust and anger) more frequently than secondary emotions, (e.g., jealous, guilty and grief) and self-conscious emotions (e.g., empathy, jealous) more frequently than self-conscious evaluative (e.g., shame, guilty) emotions (Morris *et al.*, 2008).
- Highly-significant agreement in the assessments of the dogs' emotional expressions was found in a free choice profiling methodology (Walker *et al.*, 2010).
- Dog owners easily identified fear, but also showed difficulty in identifying certain behaviours, e.g., aggression, confidence and actual play (Tami and Gallagher, 2009) and subtle behaviours (Mariti, 2012) for a dog's stress signs. Dog owners easily identified positive emotional states than negative ones (Costa *et al.*, 2014).
- From an animal welfare point of view, the studies have been focusing only on negative emotions, e.g., fear, pain (Boissy *et al.*, 2007, Mendl *et al.*, 2010).
- There was no significant difference between experienced and inexperienced people for assessing a dog's behaviours, e.g., fearful, indifference, friendly, submissive, aggressive defensive, playful (invitation play) (Tami and Gallagher, 2009) and for assessing auditory signs (Pogracz *et al.*, 2005, 2006). Identification of the facial expression in pictures of dogs showed that professionals and dog owners recognized emotions significantly better than people who did not have experience with dogs (Costa *et al.*, 2014).
- Humans represented a dog's emotion similarly to humans and partly in an anthropomorphic way (Konok *et al.*, 2015).
- Children found it difficult to identify a dog's anxiety and fear when interacting with dogs (Demirbas, 2016).
- Human psychological factors: empathy correlated with negative rating of a dog's emotional

facial expressions (Kujala, 2017).

- Females were more likely to believe that animals experience depression, anxiety, love and grief than males and humans are likely to utilize their own experience of emotions to animals (Walker *et al*, 2014).
- People's familiarity with animals reported more emotions of animals than people who had never lived with animals (Morris *et al*, 2012)
- Japanese dogs and cats owners showed their attachment to their animals highly and it was positively related to the attribution of emotions (9 out of 10) to their animals (Su *et al*, 2018). Western owners (in Belgium and Netherland) were also highly attached to their animals and people who attach highly to their animals were positively correlated with four out of six primary emotions and all four complex emotions (Martens *et al*, 2016).

To date there has been no study which described what way people assess the emotional and motivational basis of HDAB. Nor has an intervention treatment for impacting on the assessment of HDAB been established. The present study aimed to determine whether the intervention which described what the key elements to assess HDAB utilised improves people's assessment or description of HDAB in a pre-test–post-test designs and which cultural factors impact on their assessment in order to develop a consistent framework for the assessment of the emotional basis of aggressive behaviour in dogs. The following hypotheses were made based on the results of the study in Chapter 4:

1. Whether the intervention group can improve significantly: the Intervention group will show improvement in assessing a dog's emotions in different circumstances.
2. What cultural factors influence people's perception of HDAB: cultural factors: demographic factors such as Nationality, English and Japanese language respondents, dog management factors such as having a high level of experience with dogs or professional status in relation to dogs (it was added as an independent variable in the study) may influence assessing a dog's emotions in certain circumstances.

## **5.2. Methods**

In order to evaluate the efficacy of the intervention in assessing dog's emotions, a pre-test–post-test designs was selected and a randomised control design was used for dog owners from the English and Japanese language respondents to the previously reported internet survey.

### 5.2.1: Ethics statement

As the same as the Internet survey, consent was obtained from all participants for the questionnaire answers and the participants' information was treated as confidential.

### 5.2.2. Participant raters and grouping

This study was carried out using the groups of participants, selected as follows:

- i. Dog owners were recruited from the English and Japanese language participants from the internet survey described in Chapter 3. A total of 161 dog owners (72 English speakers, 89 Japanese speakers) participated in the assessment.
- ii. English and Japanese language participants who agreed to participate were allocated to two separate groups; Group A viewed 10 video clips (Set A) first and Group B initially viewed 10 different videos (Set B). Each group then watched the alternative video set with each group watching 20 videos in total. Therefore, Group A saw Set A followed by Set B while Group B saw Set B followed by Set A (See Figure 5.1). Allocation was randomised such that expertise was balanced equally between the two groups. Expertise was defined as having expertise (a professional for over 5 years, e.g. vet, veterinary nurse, dog trainer, behaviourist, trimmer), length of experience with dogs (including voluntary work over 5 years) and length of time owning dogs (over 5 years).
- iii. Within each group, individuals were allocated to either an intervention group or non-intervention group (See Figure 5.1). The Intervention was a self-contained PowerPoint presentation (PPT) in English or the same with a Japanese voice over, developed by D.S. Mills (School of Life Sciences, University of Lincoln) about the concept of aggression and the term 'aggressive behaviour', including describing the three elements of aggressive behaviour: motivation, emotion and context, which was described in Chapter 1. The resource was made using Microsoft power point (PPT, 61 slides) and described a systematic framework for assessing the motivational and emotional basis of aggressive behaviour in dogs (Mills *et al.*,2014; Mills and Westgarth, 2017).

The PPT resource consisted of the following elements:

- i. An introduction to the concept of aggression and the term 'aggressive behaviour'
  - Distinguishing between aggression and aggressive behaviour
  - Key elements for describing aggressive behaviour in dogs
- ii. Three elements for the definition of aggressive behaviour

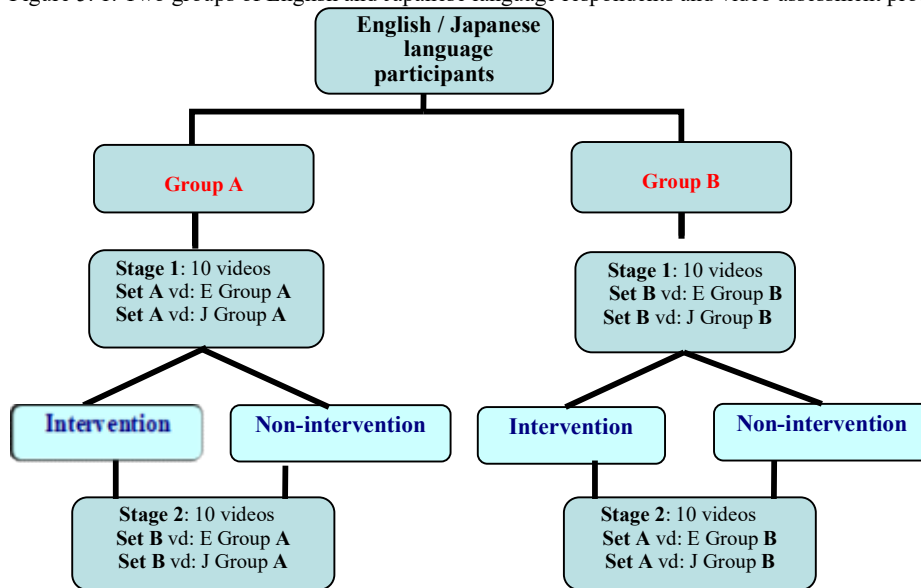
- Context
- Motivation
- Emotion: describing four components of emotion (Scherer, 2005), associated emotionally competent stimuli, and how to triangulate this evidence (Panksepp, 1998; Mills *et al.*, 2014; Mills *et al.*, 2014)

The following quality control procedures were included to develop the resource in both English and Japanese.

- i. Three of the English dog owners checked whether the English version of the PPT had enough detail while remaining comprehensible for e.g., contexts, technical terms and a length of time. The first version was edited until it could be clearly understood.
- ii. The English version was translated into Japanese and the same procedure as above was carried out with Japanese speaking owners.
- iii. The translation from English to Japanese was conducted with Megumi Fukuzawa (College of Bio-resource Sciences, Nihon University) to check for consistency. The Japanese version was then checked for comprehensibility. Any changes that were required were translated back to English and a new comprehension analysis undertaken to ensure the English version was still fit for purpose by the above person.
- iv. The narration was recorded initially in English (D. S. Mills, University of Lincoln) and it was translated into Japanese (M. Kikuchi, University of Lincoln).
- v. The PPT was uploaded as a video on YouTube ([www.youtube.com](http://www.youtube.com)) and the URL address, English: [https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_4UQhAdOA7s7hYcP](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_4UQhAdOA7s7hYcP), Japanese: [https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_2hSgy0FnGNDuZh3](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_2hSgy0FnGNDuZh3) to the video was given for the participants to access.
- vi. A pilot study was conducted with three English and Japanese dog owners for the final versions in order to check a final time for comprehensibility and length so as not to discourage participation. Any required changes were reflected in the final editing.
- vii. Participants were allocated access to the language relevant video set when participating in the study.



Figure 5. 1. Two groups of English and Japanese language respondents and video assessment procedure



### 5.2.3. Data collection

#### 5.2.3.1. The procedure of the video assessment

The experiment was carried out in the following two stages:

##### Stage 1

The video clips chosen were organised into two sets (Figure, 5.1), Set A (10 videos) and Set B (10 videos), with each set showing similar scenarios based on a typical classification of HDAB in the literature. The participants of each group: Group A, Group B were free to view the videos as often as they needed to answer the questions. The participants were asked to complete the questionnaire in relation to the 10 videos they had watched.

Before the second video set was viewed by the members of a given group, the intervention (PPT presentation) was given to half of those from each language group, Group A who had video set A first and half of Group B who had seen video set B first. The intervention group was able to view the PPT presentation as often as they wanted.

## Stage 2

This stage of the experiment was run 2 weeks after Stage 1. Each group: Group A, B then watched the alternative video set. After watching the videos, participants were asked to complete the questionnaire again in relation to these videos. The exercise used the same questions as in stage 1.

### 5.2.3.2. Questionnaire

Two versions of English and Japanese questionnaire titled ‘Online video assessment for dogs’ was implemented into the online survey software Qualtrics (Qualtrics, Provo, UT, USA) and its URL address was e-mailed to both English and Japanese language volunteers with instructions for completion (Appendix Table 5. 1). The first section included 17 questions related to the demographic features of the respondent, including the participants’ dog-related background, their experience of dogs, and the period of time they have worked with dogs and their opinion on training methods. The second section of the questionnaire comprised of seven questions for each video asking whether and how the dog is displaying aggressive behaviour. These questions were based on the four components of emotion (Scherer 2005) and related to; appraisal of the events (question 2: 8 items, closed-ended question) including potential emotionally competent stimuli (ECS) (question 3: 8 statements – total 24 items, closed-ended question), arousal (question 4: 42 items, multiple choice question), action tendencies (question 5: 2 statements – total 19 items, closed-ended question and multiple choice question) and signs of communication (question 6: 8 signals – total 86 items, closed-ended question). The final item required participants to describe the dog’s emotion for each video to an open-ended question which can be used to infer emotional state (Mills and Westgarth, 2017).

The questionnaire was reviewed by two behaviour experts; Kevin McPeake and Nadja Affenzeller (both working in the animal behaviour clinic at University of Lincoln) in order to remove or revise unclear items and set agreement with the answers between the experts. A pilot study of three English and Japanese dog owners ensured the questionnaire including the expert opinion was comprehensible for the typical dog owner. The experts pointed out that several videos did

not clearly show any potential signals or movements, therefore the item “Not visible” was included. Some statements, particularly those using technical terms related to behaviour, were confusing for the dog owners and they were clarified and simplified.

The followings are online surveys for two sets for each population:

English Set A: [https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_4MWKRU0AWy8pghv](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_4MWKRU0AWy8pghv)

English Set B: [https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_0H5w1oFUqbtSi7X](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_0H5w1oFUqbtSi7X)

Japanese Set A: [https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_5mCPU1HFicv53Sd](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_5mCPU1HFicv53Sd)

Japanese Set B: [https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_09bvAtmfVu6o2fH](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_09bvAtmfVu6o2fH)

### 5.2.3.3. Video clips

The two sets of 10 video clips (Set A & Set B, Appendix Table. 5.2) depicting HDAB were selected by Mie Kikuchi from publicly available videos on YouTube. Videos were identified between January and March 2015 using search terms derived from popular classifications of aggression including: “dominance/conflict”, “fear”, “possessive”, “territorial”, “maternal”, “play”, “predatory”, “redirected”, “pain-induced”, and “learned”. A group of videos assigned as representing ‘Learned aggression’, i.e., a dog is growling as his owner gives a command (the dog learned to growl on owner’s command, thus the dog does not display his emotion) was not included after being deemed unsuitable by D.S Mills as an example of the selected emotional response. In total, nine videos were used in the analysis. The videos were chosen for inclusion in the study if they showed a variety of components of emotion by the dogs, e.g. contextual clues of relevance relating to the trigger of the response, communicative signals such as facial expressions, vocalisations, and body posture, behavioural tendencies in the form of movements, and signs of arousal changes like piloerection. The videos all met the following criteria:

- They allowed experts to make a reasonably confident inference of the motivational and emotional states from the available material
- They showed at least one warning signal before the dog exhibited overtly aggressive behaviour, such as biting, snapping, baring teeth, growling, snarling, lunging, and barking.
- Clips were chosen in such a way that a variety of targets were represented in each set, e.g. a member of the family (a child, baby, female, male), or a stranger.

- The video clips were required to be of adequate visual quality when representing the dog's behaviour

The selected video sets were edited as follows: any words, characters, or captions which may influence the assessment of HDAB were deleted and the length of the videos were edited to be around one minute.

#### 5.2.4. Statistical analysis

The participants' understanding of the emotion presented by the dogs was coded in terms of the level of agreement with the rating of the expert. In order to focus on the main effect of the intervention, three core questions were analysed for each video clip, as primary outcome variables:

- Question 7: dog's emotion in the circumstance
- Question 2: triggers of the dog's response
- Question 3: emotionally competent stimulus (ECS)

Scores for participants were based on the level of agreement across these nine videos with the consensus of the experts used in development, validated by D.S Mills. Thus each participant's total score of the "Baseline score" (calculated from the first set of videos they watched) and a "Final score" (calculated from the second set of videos watched) for each video set were 0-9. This score was used for the question 2: triggers of the dog's response and 3: emotionally competent stimulus (ECS). The score of the last item (the question 7) was scored as: good agreement with the experts=1, part agreement or disagreement=0 for each video. Answers which were similar to the experts' answers, e.g. fear, anxiety, nervous, were regarded as in agreement. The experts' answers for the three items are described in Appendix Table 5. 3.

Ten independent variables (Appendix Table 5.4) were included in the subsequent analysis to examine the extent to which they impacted on the perception of dog emotions:

1. Intervention or non-intervention group
2. Video set: Group A or B
3. Nationality of respondents (European, North American, Japanese, and other)
4. English and Japanese language version of the study
5. Gender
6. Age group (5 categories - 18-29 years, 30-39, 40-49, 50-59 and over 60)
7. Professional status in relation to dogs: professionals were participants who had worked

with dogs as a profession for over 5 years, e.g. vet, veterinary nurse, dog trainer, behaviorist, trimmer. Non-professionals were participants who do not work with dogs.

8. Period of dog ownership (5 categories – Less than 5 years, 6-10, 11-20, 21-30, over 31 years)
9. Period of working with dogs - including voluntary work (4 categories - None, less than 5, 6-20, over 21 years)
10. Number of dogs owned (5 categories – None, one, two, three, more than four)

One-way ANCOVA (Analysis of covariance) was used to examine the influence of 10 independent variables on a dependent variable: final score of each of the three dependent variables: 1. dog's emotion in the circumstance, 2. triggers of the dog's response and 3. emotionally competent stimulus while controlling for the effect of the baseline score (covariate factor).

The analysis particularly focused on the influence of the variable: Intervention or non-intervention group on the total score of the dependent variables.

The following were the steps of analysis:

1. One-way ANCOVA was performed using 10 variables until the minimum adequate models (the model that left the most significant factor /s,  $P < 0.05$ ) were established by sequentially removing the least significant factors and the model which left the most significant factor /s was selected to analyse further (i.e. identifying group differences).
2. Two models were considered: one which included the language of the study but not the nationality of participants, alongside the other variables. The other model replaced the language factor with the nationality of the respondents. These models had to be considered separately due to collinearity within the data relating to Japanese respondents.

After significant effect variable / s were determined, post-hoc tests with the one-way ANCOVA performed which looked to identify the difference between the variables of the category (if the category had more than three variables) using the Bonferroni correction.

### 5.3. Results

#### 5.3.1. Rating of the emotion of the dog in different circumstances

The total baseline and final score of Intervention and non-intervention is shown in Table 5.1. Both groups showed a higher than baseline score (Intervention group  $M = 2.8434$ , non-intervention group  $M = 2.5128$ ). However, both mean baseline and final scores were 3 out of a maximum score of 9 (less than 30%).

Both English and Japanese language respondents showed a higher than baseline score (Appendix Table 5. 5; E Intervention group  $M = 3.1316$ , E non-intervention group  $M = 2.7056$ , J Intervention group  $M = 2.6000$ , J non-intervention group  $M = 2.3636$ ). Japanese respondents showed lower scores for both baseline and final score of Intervention and non-intervention than English language respondents. However, both Japanese Intervention and non-intervention groups showed significant differences between baseline and final scores.

Table 5 1. The total scores of the intervention and non-intervention group for dog's emotion

Group	N	Baseline		Final	
		Mean Score	Std	Mean Score	Std
Intervention	83	<b>1.6386</b>	1.06586	<b>2.8434</b>	1.40106
Non-intervention	78	<b>1.6667</b>	1.07711	<b>2.5128</b>	1.10187

One-way ANCOVAs were performed for the two separate models: one which included the language of the study, another model included the nationality of participants to identify which variables have a significant effect on the total score of each respondent's rating for dog's emotion. The intervention treatment variable did not have a significant effect on the final outcome in either language or nationality model, nor were there any significant interactions with this factor. The model, which considered the language of the study, did not show any significant effects. However, the model which included the nationality (Table, 5.2) indicated that there were significant differences in the final score between the groups based on their nationality, ( $F(3, 156) = 2.923, p = 0.036$ ). The covariate baseline score was not significantly related to their final score, ( $F(1, 156) = 0.988, p = 0.322$ ).

Table 5 2. Variables remaining in the final “Nationality” model, using one-way ANCOVA for analysis of participants’ rating of dog’s emotion \*The significant variable in bold.

Variable	df	Mean Square	F	Sig.	Partial Eta Squared
<b>Nationality</b>	3	4.529	2.923	<b>.036</b>	<b>.053</b>
Covariate baseline Score	1	1.532	.988	.322	.006
Error	156	1.550			
<b>Total</b>	161				

After the results of the final model which included the nationality indicated significant difference, post-hoc tests which ANCOVA showed were looked up to identify the difference between the groups of the nationality.

Post hoc tests revealed that there was a significant difference between North Americans and Japanese respondents ( $P=0.043$ ), but there was no significant difference between other groups (North American and European  $P = 0.188$ , North American and Other,  $P = 1.000$ , Japanese and European  $P = 1.000$ , Japanese and Other  $P = 1.000$ , Table 5.3). Comparing the estimated marginal means showed that the highest level of agreement with experts was with North American (Mean = 3.246) compared to Other ( $M = 3.116$ ) and European ( $M = 2.567$ ) with the lowest being Japanese ( $M = 2.507$ ) (Appendix Table 5.6). However, all levels of the effect size (Partial Eta Squared) were small ( $\eta^2=0.053$ ) (Table 5.2.).

Table 5 3. Post hoc tests for nationality using Bonferroni correction of one-way ANCOVA for analysis of participants’ rating of dog’s emotion. \*The significant variable in bold.

(I) Nationality	(J) Nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
European	North American	-.679	.313	.188	-1.515	.156
	Japanese	.060	.255	1.000	-.621	.741
	Other	-.549	.488	1.000	-1.854	.757
North American	European	.679	.313	.188	-.156	1.515
	<b>Japanese</b>	.739	.272	<b>.043</b>	.014	1.465
	Other	.130	.498	1.000	-1.199	1.460
Japanese	European	-.060	.255	1.000	-.741	.621
	<b>North American</b>	-.739	.272	<b>.043</b>	-1.465	-.014
	Other	-.609	.461	1.000	-1.840	.622
Other	European	.549	.488	1.000	-.757	1.854
	North American	-.130	.498	1.000	-1.460	1.199
	Japanese	.609	.461	1.000	-.622	1.840

### 5.3.2. Results for the evaluation of triggers of the dog's response

The total baseline and final score for both intervention and non-intervention groups are shown in Table 5.4. Both groups showed a higher final score than baseline score (intervention group  $M = 3.9036$ , non-intervention group  $M = 3.9744$ ). However, both mean score of baseline and final score were about 4 out of a maximum score of 9.

Both English and Japanese language respondents showed a higher than baseline score (Appendix Table 5.7; E Intervention group  $M = 4.2105$ , E non-intervention group  $M = 4.4412$ , J Intervention group  $M = 3.6444$ , J non-intervention group  $M = 3.6136$ ). Japanese respondents showed lower scores for both baseline and final scores of Intervention and non-intervention than English language respondents. However, only the Japanese non-intervention group showed significant differences between baseline and final scores.

Table 5.4. The total scores of Intervention and non-intervention group for triggers of the dog's response

Group	N	Baseline		Final	
		Mean Score	Std	Mean Score	Std
Intervention	83	<b>3.4096</b>	1.38842	<b>3.9036</b>	1.42807
Non-intervention	78	<b>3.4615</b>	1.52633	<b>3.9744</b>	1.61144

A one-way ANCOVA was performed for the two separate models: one which included the language of the study, another model included the nationality of participants to identify which variables have a significant effect on the total score of each respondent rating for triggers of the dog's response. Both models had exactly the same results and showed no evidence of an effect of the intervention or any interaction with other variables.

Neither English/Japanese language nor nationality had a significant effect (see Table 5.5)

The covariate baseline score ( $F(1, 157) = 16.564, p = 0.001$ ), and the groups professional versus non-professional status ( $F(1, 157) = 8.282, p = 0.005$ ), and initial video set Group A or B ( $F(1, 157) = 5.577, p = 0.019$ ) were significantly related to the final score. Comparing the estimated marginal means showed that the higher final score for triggers of dog's response was among the professional ( $M = 4.413$ ) compared to the non-professional group ( $M = 3.720$ ) (Appendix Table 5.8). Group B ( $M = 4.335$ ) showed higher final scores than Group A ( $M = 3.798$ ) (Appendix Table 5.9). However, both effect size were small (professional  $\eta p^2 = 0.050$ , Group B  $\eta p^2 = 0.034$ ).



Table 5 5. Variables retained in the final “English / Japanese language respondents” and Nationality” model with using one-way ANCOVA for triggers of the dog’s response  
\*The significant variables in bold.

Variable	df	Mean Square	F	Sig.	Partial Eta Squared
<b>Professional or non-professional</b>	1	16.331	8.282	<b>.005</b>	<b>.050</b>
<b>Group A or B</b>	1	10.997	5.577	<b>.019</b>	<b>.034</b>
<b>Covariate baseline score</b>	1	32.660	16.564	<b>.001</b>	
Error	157	1.972			
<b>Total</b>	161				

### 5.3.3. The circumstance which explains the reason why the dog is displaying the behaviour (Emotionally competent stimulus)

The total baseline and final score of both intervention and non-intervention groups is shown in Table 5.6. Both groups showed a slightly higher final score than baseline score (intervention group  $M = 2.4578$ , non-intervention group  $M = 2.2051$ ). However, both mean baseline and final scores were below 50% of a maximum possible score.

Both English and Japanese language respondents showed a higher than baseline score (Appendix Table 5. 10; E Intervention group  $M = 2.7895$ , E non-intervention group  $M = 2.7647$ , J Intervention group  $M = 2.1778$ , J non-intervention group  $M = 1.7727$ ). Both respondents’ scores showed similar results for both baseline and final scores of Intervention and non-intervention. Only the English intervention group showed significant differences between baseline and final scores.

Table 5 6. The total scores of intervention and non-intervention groups for emotionally competent stimulus  
\*The highest numbers and percentage of the score in bold.

Group	N	Baseline		Final	
		Mean Score	Std	Mean Score	Std
Intervention	83	<b>1.8434</b>	0.99366	<b>2.4578</b>	1.28121
Non-intervention	78	<b>1.8205</b>	1.17045	<b>2.2051</b>	1.14369

A one-way ANCOVA was performed for the two separate models: one which included the language of the study, another model included the nationality of participants to identify which variables have a significant effect on the total score of each respondent rating for emotionally competent stimulus, the intervention did not appear to have an effect and nor did any of its interactions with the other variables in the two models. However, the model which included the nationality showed more effect size ( $\eta p^2 = 0.127$ ), on the final score of emotionally competent stimulus than the model that considered the language of the study ( $\eta p^2 = 0.123$ ). Therefore, the model which included the nationality was selected (Table 5.7). It indicated that there was a significant difference in the final score between the groups based on their nationality ( $F(3, 155) = 7.521$ ,  $p = 0.001$ ) and whether they were from Group A or B, ( $F(1, 155) = 8.578$ ,  $p = 0.004$ ). The covariate baseline score was not significantly related to their final score ( $F(1, 155) = 0.733$ ,  $p = 0.393$ ).

The effect size of nationality was small ( $\eta p^2 = 0.127$ ) and the effect size of Group A or B was also small ( $\eta p^2 = 0.052$ ).

Table 5.7. Variables retained in the final model for nationality used in the ANCOVA for emotionally competent stimulus \*The significant variables in bold.

Variable	df	Mean Square	F	Sig.	Partial Eta Squared
<b>Nationality</b>	3	9.366	7.521	<b>.000</b>	<b>.127</b>
<b>Group A or B</b>	1	10.682	8.578	<b>.004</b>	<b>.052</b>
Covariate Baseline score	1	.913	.733	.393	
Error	155	1.245			
<b>Total</b>	161				

After the results of the final model which included the nationality indicated significant difference, Post-hoc tests were looked up to determine the difference between the groups of the nationality.

The tests revealed (Table 5.8) that there was a significant difference between Japanese and the other three groups (European  $p = 0.002$ , North American  $p = 0.012$ , Other  $p = 0.049$ ), but there was no significant differences among the groups of European, North American and Other (European and North American  $p = 1.000$ , European and Other  $p = 1.000$ , North American and Other  $p = 1.000$ ). Comparing the estimated marginal means showed that the highest level of agreement

with experts was with Other ( $M = 3.070$ ) compared to European ( $M = 2.794$ ) and North American (Mean=2.715) with the lowest being Japanese ( $M = 1.962$ ) (Appendix Table 5.11). The baseline A group ( $M = 2.930$ ) showed higher score than baseline B group ( $M = 2.240$ ) (Appendix Table 5.12).

Table 5 8. Post hoc tests for nationality using the Bonferroni correction of one-way ANOVA output for emotionally competent stimulus \*The significant variables in bold.

(I) Nationality	(J) Nationality	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
European	North American	.080	.281	1.000	-.672	.832
	Japanese	.833	.223	.002	.236	1.429
	Other	-.276	.438	1.000	-1.446	.894
North American	European	-.080	.281	1.000	-.832	.672
	Japanese	.753	.239	.012	.114	1.392
	Other	-.356	.447	1.000	-1.550	.838
Japanese	<b>European</b>	-.833	.223	<b>.002</b>	-1.429	-.236
	<b>North American</b>	-.753	.239	<b>.012</b>	-1.392	-.114
	<b>Other</b>	-1.108	.413	<b>.049</b>	-2.213	-.004
Other	European	.276	.438	1.000	-.894	1.446
	North American	.356	.447	1.000	-.838	1.550
	Japanese	1.108	.413	.049	.004	2.213

### 5.3. Discussion

This study examined the effect of exposure to an intervention on three dependent variables: key elements of assessing a dog's emotion; dog's emotion in the circumstance, the trigger of a dog's response and emotionally competent stimulus (ECS) and also what factors have a strong effect on the total level of agreement with the experts for each of the three dependent variables.

There was no evidence of an effect of the intervention or any interaction with the other independent variables on the participants' responses being in agreement with the experts.

#### 5.4.1. The participants' assessment of dog's emotion

For the three measurements of participants identifying a dog's emotion, both intervention and non-intervention groups seemed to appear much lower than experts. The results indicated that dog owners were not aware of how to assess HDAB underlying four lines (components) of evidence (Scherer, 2005) of a dog's emotion (see Chapter 1: 1.3.3) in different circumstances which is important to infer the cause of HDAB (Mills *et al.*, 2013; Mills *et al.*, 2014; Mills and Westgarth, 2017). The previous studies found that people easily identified some emotions such as fear in dogs (Tami and Gallargher, 2009), and primary emotions, e.g., fear, sadness, joy, disgust and anger (Morris *et al.*, 2008), as positive emotions (Costa *et al.*, 2014); but found it difficult to identify some behaviours, e.g. aggression, confidence and subtle signs (Tami and Gallargher, 2009; Mariti, 2012). However, the present study found that people seemed to be confused to identify, for example, fear and frustration in the circumstances and assessed dog's positive emotion, e.g., joy, excitement for dog's tumble play with its owner as a negative (frustration) emotion. This finding was also indicated in both English and Japanese language groups. The results may indicate that it may be caused by people who cannot properly identify the subtle signs in dogs or people may label dog's behaviour in similar circumstances. The results for the classification of emotion and motivation in the internet survey (see Chapter 4: 4.3.3) also showed that respondents did not assess subtle signs of the dog's emotion effectively.

The respondents' lower agreement with experts may be influenced by an owners' lack of knowledge of communicative signals in dogs which stems from insufficient or inconsistent information in popular media or literature (which is described in the results of Chapter 2 and 4). Similarly, lower agreement with experts may be influenced by their level of experience with dogs as indicated in the Internet survey study, although some previous studies found people's

experience of dogs did not play a role in assessing a dog's emotional behaviour (Molnár et al., 2009; Pongrácz et al., 2005; Tami and Gallagher, 2009; Konok *et al*, 2015).

Japanese respondents showed a lower agreement score than English respondents. It may indicate that the result is affected by not only owners' lack of knowledge of dog's behaviour, but also other cultural factors. Anthropomorphism may affect the owners viewing of a dog's emotion (Konok *et al*, 2015). A previous study (Konok *et al*, 2015) found that people viewed dog's emotions in a similar way to those of humans. However, humans and dogs have a different composition of the body. Facial expression plays an important role when humans represent their emotion in social interactions (Schmidt and Cohn, 2001), while the whole body plays a role when dogs communicate (Schenkel, 1947; van Hooff and Wensing, 1987; Tami and Gallagher, 2009; Konok *et al*, 2015). Therefore, people need to learn how dogs express their emotions differently and viewing of a dog's emotions objectively, i.e., the assessment of motivational and emotional basis description of aggressive behaviour in dogs (Mills *et al.*, 2013; Mills *et al.*, 2014; Mills and Westgarth, 2017). As described in Chapter 1 and the results of Chapter 3, the difference of the role of a dog and expectations for a dog between English and Japanese language respondents may influence the recognition of the importance of observing a dog's behaviour. It will be worth exploring for future research.

In order to emphasize the importance of each component when assessing dog's emotions to people and identify what other components people find difficult to assess, it may be useful to analyse whether people also recognise other components such as arousal signs, action tendencies and communicative signals of the dogs (Scherer, 2005).

### 5.3.2. The factors which have an effect on respondents' understanding of emotion in dogs

Exposure to the intervention treatment did not have a significant effect on the final score in the model of all three measurements, and there were not any significant interactions with other factors. However, some factors did have an effect on respondents' final score for the assessment of a dog's emotion. For people's assessing dog's emotions, respondents of Japanese 'Nationality' showed less understanding of dog's emotions (a lower mean difference) than North Americans. They also indicated less understanding than other nationalities for assessing emotionally competent stimulus. The results may support the findings of the internet survey in which Japanese respondents were less likely to recognise subtle signs of a dog's behaviour than English language respondents, which were revealed in the results in Chapter 4. It may be related to another finding

in that Japanese respondents were less likely to perceive milder signs; staring, snapping, nipping and lunging as aggressive behaviour (See Chapter 4.3.1.2), although previous studies investigated that the recognition of non-verbal emotional vocalizations (screams and laughs) was not across cultures (Sauter *et al*, 2010) and images of facial expressions were neither (Gendron *et al*, 2014), not only do Japanese respondents' seemingly lack knowledge to evaluate a dog's emotion, but they also inaccurately identify milder signs as aggressive behaviour in dogs. This may lead them to not pay careful attention to the dog's emotions and to misunderstand them.

The 'Professional' status of respondents showed a significant effect on the final score of assessing triggers of the dog's response. This result also supports the finding of the Internet survey that respondents who have a 'High level of experience with dogs' were likely to use all body region signals when they assess HDAB (see Chapter 4: 4.3.1.1). The group of 'High level of experience with dogs' also showed a strongest effect on assessing both emotion and motivation in the photos (see chapter 4: 4.3.3.1, 4.3.3.2). Although previous studies have shown the dog owners' experience of dogs was not critical for accurately assessing a dog's emotional behaviour (Molnár *et al.*, 2009; Pongrácz *et al.*, 2005; Tami and Gallagher, 2009; Konok *et al*, 2015), other studies found that professional people (Costa *et al*, 2014) or people who have high levels of experience seem to have more knowledge ((Peachy, 1993; Jagoe and Sepell, 1996; Bahlig-Pieren and Tuner, 1999; Kerswell *et al*, 2009; Costa *et al*, 2014; Fidler *et al*, 2015) and that similarly, in the present study, they are significant factors on assessing a dog's triggers of the dog's response.

Group B showed a significant effect on the final score of assessing triggers of a dog's response and Group A showed a significant effect on the final score of assessing emotionally competent stimulus. Despite controlling for viewing order in experimental design, the sets of videos were viewed in a different order between Group A and B which may have affected the results because of the differences of video representation, e.g., some people may find it difficult to assess a dog's emotions because the dog's signalling, e.g., the dog is sometimes sitting and it is difficult to view the tail movement or body changes.

Nationality was the only factor which showed the fairly large number of variance by independent variable (13%) on assessing dog's emotion in different circumstances. This finding indicates that nationality affects perception of HDAB and it supports the initial hypothesis.

### 5.3.3. Factors which may influence the results of the intervention

Several factors may have affected the results such that the intervention treatment did not have an effect on the final rating of the dog's emotion:

#### i Implication of other elements which may influence people's perception of HDAB

The intervention material introduced only what aggressive behaviour is and how people should assess HDAB underlying three key elements. There may be people who do not recognise the importance of understanding dog's behaviour. In this case, the basic information, e.g., the importance of understanding dog's behaviour, what dogs need, how they express their emotions to convince them would be necessary before the intervention was introduced to improve their understanding of HDAB. Other cultural factors such as the level of attachment towards dogs, legal pressure (e.g., Dangerous Dog Acts, 1991) and socialisation of dogs may also influence people's perception of HDAB, therefore, in order to develop the intervention material efficiently, further investigation for other cultural factors and approach from various aspects may be useful.

#### ii Implications of experimental design and the mode of information transmission of the intervention treatment

This is a novel study utilising an internet exercise for assessing a dog's emotion and other elements of behaviour and also focusses on the challenge of building a consistent framework for promoting effective assessment of HDAB. Therefore, the experimental design here was limited by a lack of prior knowledge as to what extent the participants would understand the information presented in the intervention treatment. The intervention (the PPT) was based on scientific descriptions and explanations using many technical terms related to dog behaviour such as appraisal, arousal and emotionally competent stimulus, (e. g., desirable, affiliates and dependents). These might have been unfamiliar with the dog owners, particularly people who do not have significant experience interacting with a dog and sufficient knowledge about dog's behaviour. Even though the narration and the texts described each of the terms, the participants may have found that the entire PPT material was hard to understand. Particularly, Japanese respondents were less likely to recognise communicative signals than English language respondents (see Chapter 4: 4.3.1.2, 4.3.3), possibly resulting in the findings of the present study that Japanese

had a significantly lower score than other countries for assessing dog's emotion and ECS. Although the videos were developed by three English and Japanese language dog owner participants viewing the PPT which was then edited until they understood it clearly, the PPT may still have been unclear for other people. The level of a person's understanding depends on the person, therefore reviewing by more dog owners may help to make the PPT more comprehensive for the participants. Alternatively, a questionnaire and the PPT could be created for two groups to control the groups (Brelsford *et al.*, 2017): high or basic level of experience with dogs or experts and non-experts.

Media-limited information may establish peoples' stereotype when assessing dog's emotion in certain circumstances. For example, the study in Chapter 2 described, the media introducing mainly fear or anxiety as the potential emotion of a dog in common circumstances. For this reason, it may be better to replace technical terms drawn from the behavioural scientific literature with simpler descriptions in accessible language which can be easily understood.

As for the design of the PPT, it may be beneficial to divide the contexts into several stages covering each key component and then produce questions in each stage in order to clarify their understanding (Whitehead, 2018).

The style of information as presented in the PPT may also have affected the results. As the study in Chapter 2 found, Japanese media usually delivers information with illustrations to the public while English media more often presents information as written text. The PPT which was used contained many written texts. The previous studied suggested that many western countries are 'low-context' cultures which are verbally oriented and used to explanation and texts, while Japan is 'high-context' cultures which used to symbols, signs and indirect communication (Page and Wiseman, 1993; Hall, 1976; Gudykunst *et al.*, 1996; De Mooij and Hofstede, 2011). Therefore, people in Japan may not be familiar with taking information from material which includes mainly written text and therefore found the PPT was more difficult to understand.

Psychologists have discussed the power of beliefs on cognitive processing (Cook and Lewandowsky, 2011; Cook and Lewandowsky, 2012) and they state that it is very difficult to change people's mind once they have processed information (Cook and Lewandowsky, 2011). For example, during the studies described here, people who have more knowledge and handling experience with dogs usually have their own opinions and methods and it may be difficult for them to accept a new approach. Lewandowsky *et al.* (2012) suggested three common strategies to remove the influence of misinformation and change people's mind: teaching must focus on core evidence, providing an explicit warning that the certain information might be incorrect to make



sure people are cognitively on guard and informing people to use an alternative explanation.

Thus, we need to consider such individual cultural differences and find the best way to combine the information formats in the material given to people.

The respondents were required to select answers to many items for each question for the 10 videos at both stages. Participants may have viewed each clip multiple times in order to answer the questions. This procedure may result in fatigue in observing dog's behaviour carefully and may have affected the final scores.

### iii Implications of questionnaire and video set

The numbers of videos and items of the questionnaire may have also affected the results. The participants were required to view 10 video clips for each stage (stage 1 and 2) and provide answers to seven questions for each video. Even though each video clip was not long (~1 minute), having 5 to 10 items in some questions may have meant the participants viewed the same video several times, until they got their answers. It may be that this was too much for the participants to continue the exercise all the way to the end, and this loss of motivation may have resulted in less careful observation. Therefore, the number of questions, items, and video clips presented in the future should be reduced to reduce participant fatigue. As the intervention resource took approximately sixty minutes for the participants to review, the text and narration length should be also reduced.

Some videos may not show enough visible communicative signals due to the camera angle and show clear visible signals to the participants. Therefore, it may have been difficult for the participants to view, e.g., facial expressions, tail position/ movement, body orientation / movement or some videos had dog behaviour at some distance to the camera.

In order to ensure the procedure was counterbalanced for "order" and "video set" effects, the different video sets were allocated between the groups in stage 1 and 2. However, if the respondents in the intervention and non-intervention group viewed the same video set in stage 1 and 2, it may be more precise in identifying the efficacy of the intervention between the groups.

## **5.5. Conclusion**

The results found that the respondents did not accurately identify a dog's emotion based on the key components and exposure to the intervention treatment did not have a strong effect on the final score of assessing a dog's emotion. However, the study found, the same as the finding of in the internet survey, a relationship between cultural factors and people's perception of HDAB. Different nationalities and professional or non-professional (high level of experience) produced significantly different final scores when assessing a dog's emotion. This provides evidence for a culturally based factor which influences interpretation of dog behaviour.

In order to establish a consistent assessment of HDAB underlying the key components of dog's emotions, a further study needs to consider modifying the experimental design. This would adjust the preference of an individual country, people's level of handling experience with dogs. Some changes to the questionnaire, videos and PPT would be useful to identify people's perception more clearly.

## **Chapter 6: General discussion**

This thesis has explored the representation of people's perception of HDAB, and what cultural factors influence this perception, in order to develop a consistent systematic framework for the assessment of human-directed aggressive behaviour in dogs (HDAB).

### **6.1. The fundamental problem which may arise related to HDAB**

The starting point of this research was the consideration that people do not perceive aggressive behaviour in dogs appropriately, which may be related to the causes of human-directed aggressive behaviour in dogs (HDAB). One fundamental problem is that people may describe a dog's behaviour without clearly considering the dog's motivation and emotions, therefore, using the terms "aggression" or "aggressive behaviour" with varying meanings. For example, some people describe the seeking behaviour of a dog that chases a jogger as a result of frustration by being on a lead as "fear aggression" because they may presuppose that the dog is fearful of movement. Similarly, some people describe a dog that growls at his owner when he is approaching as 'dominance aggression', although the dog is more likely showing fear of his owner after the dog has been previously repeatedly punished by the owner. These interpretations are people's subjective perceptions of the dog's behaviour and such subjective perceptions of dog's behaviour may result in people's inappropriate management of HDAB. Therefore, it can be argued that a motivation and emotion based assessment for HDAB need to be established (Mills *et al.*, 2013; Mills *et al.*, 2014; Mills and Westgarth, 2017).

Even in the veterinary behaviour literature, it has been recognised that there are problems with the descriptions of aggressive incidents in dogs (Reisner, 2003). Thus, the first investigation of this research project was to identify whether or not the descriptions and classifications of aggressive behaviour in dogs have improved in the science literature. This initial survey revealed there was no consistent terminology to describe HDAB and no consistency in the differential diagnoses and classifications of HDAB.

Another consideration is that if there is no clear terminology for the description of aggressive behaviour in dogs, people's perceptions of HDAB may be affected by cultural differences. It can be argued that people's perceptions is influenced by personal characteristics such as belief, personality, and knowledge (Ackerman, 1996; Roche, 2007; Hwang et al 2011), which may be based on an individual's culture (Markus and Kitayama, 1991; Matsumoto, 2006). The cultural

influence of people's perception of HDAB in dogs has not been researched in previous studies. Therefore, this research explored how people perceive HDAB and what cultural factors affect people's perception of HDAB, in order to try to establish a consistent HDAB assessment method. It was thought that a major influence on people's perception of HDAB would be an inconsistent representation in the scientific literature, described earlier and how the popular media describes HDAB. This was investigated in the next step of the project.

## **6.2. The presentation of popular media in UK and Japan**

The mass media has power and plays an influential role in delivering information and shaping opinion to individuals and society (Katz *et al*, 1973; Gurevitch *et al*, 1982; Grilli *et al*, 2002; Curran, 2012; Wiest, 2016). Therefore, what information the media delivers is important, and this information also shapes individual perceptions (Wiest, 2016).

In Chapter 2, cultural influences were investigated by examining how HDAB was described in the popular media. Books, magazines and internet sites were compared using a qualitative methodology based on the represented motivation and emotion of dogs in the UK and Japanese media.

Overall, similarly to the scientific literature, both English and Japanese media showed inconsistent or inappropriate descriptions of motivation and emotion in certain circumstances or provided description without considering emotions. Even when emotions in dogs were considered, only a few types of emotions, i.e., fear, anxiety and frustration in common circumstances were described in both countries. From the results, people may be confused or not clearly distinguish between motivation and emotion. Similarly, people may label a dog's behaviour without recognition of dog's various emotional states in circumstances.

Moreover, there were other factors that may result in societal-cultural influences on people's perception of HDAB and its management. Cultural differences in media descriptions and styles of presentation (information processing) were found between articles from the UK and Japan. UK media contained structural explanations such as; firstly: the behavioural problem, secondly: the potential cause, and lastly: how to treat the problem. On the other hand the Japanese media focussed the great majority of information only on how to treat the problem, with some articles not explaining the cause of the problem at all. The UK media presented information more as text than photos or illustrations, while the Japanese media used more photos or illustrations than text. The results support the proposed communication styles in two cultural dimensions: low-context

culture and high-context culture (described in Chapter 2; Hall, 1976; Gudykunst *et al*, 1996). De Mooij and Hofstede (2001) suggested that how people learn new information is related to how people process information. In western countries (where people are in general individualistic), low-context culture employs explicit or direct verbal communication and use wordy explanations or descriptions. In contrast, in Asian countries (where people are in general collectivist), high-context culture employs indirect verbal communication and uses signs or symbols (Hall, 1976; Gudykunst *et al*, 1996; De Mooij and Hofstede, 2011). People of individualistic, low-context cultures are more likely to read books and newspapers (De Mooij and Hofstede, 2011). Therefore, people in low-context culture (people in western countries) get used to reading texts, but people in high-context culture (i.e., Japanese, Chinese) do not get used to this method of learning and may find it difficult to understand material with lots of text.

Another Hofstede identified dimension of national culture (Hall, 1976; De Mooij and Hofstede, 2011) is power distance (described in Chapter 2. 1). A high power distance culture was observed in Japan (Hofstede, 1980; Hofstede, 2011) where historically people respect authority within social hierarchies (Tujimura, 1987), e.g. respecting elderly, high status people. On the other hand, this was observed less in America, where people cherish their equality (Page and Wiseman, 1993). Previous studies found that the Japanese hold higher power distance for the relationship between teachers and students (Engebretson and Fullmer, 1970; Neuliep, 1997), in advertisements (Mueller, 1987) and on websites which describe features associate with social status and hierarchy appeal (Straub *et al.*, 1997; Singh, 2005) more so than compared to American examples. From the results of the this study, it is possible to say that people in high power distance cultures (like Japan) may be more easily influenced by the power of mass media than people in lower distance cultures.

Such cultural differences between low and high-context culture and power distance may be the basis of the common styles of presentation (information of processing) and contents found in the UK and Japanese media. The English media uses more textual explanations and may convey more logical or factual information to the public. In contrast the Japanese media uses more symbols and illustrations in short explanations. The style of presentation may affect the two populations' understanding and perception of HDAB differently, as seen in the results of the current study. Therefore, the media's influence can be considered crucial and is culturally dependent. It is therefore important for the media to be aware of the cultural characteristics and convey the appropriate and sufficient information necessary to educate people in that cultural context using the populations' preferred style of information processing.

### **6.3. Cultural differences in dog management between English and Japanese language respondents**

After investigating the differences of descriptions in the popular media between UK and Japan, other societal-cultural differences and similarities (on demographics and dog management factors) were investigated through an internet survey. These factors may also influence people's perception of HDAB in the wider population between English and Japanese language respondents. An internet survey was developed for English and Japanese language dog owners focusing on three factors: general demographics (general culture), dog management culture, and people's perception of HDAB. Cultural differences and similarities on demographic and dog management factors included: collectivism or individualism, attitude towards aggression, attitude towards HDAB, the role and value of dogs, types of information and sources of knowledge, handling experience, and training methods. These factors were investigated between English and Japanese language respondents.

Overall, the two populations showed some differences for demographic and on all factors of dog management. Demographic factors showed a significant difference in eight out of 11 categories. Among English language respondents, the majority of their nationality was North American (40.3%), ethnic group was Caucasian (88%), gender female (88.7%) with the biggest age group 30-39 (24.3%). For the Japanese respondents, the majority of the nationality was Japanese (98.7%), ethnic group Asian (94.5%), gender female (85.1%) and age group mostly between 40-49 (37.3%) years.

On measures of collectivism and individualism, English language respondents showed an individualistic tendency, but Japanese respondents showed a collectivism tendency. These results support a previous study suggesting that people in Western countries are independent of other people (Hofstede, 1980; Triandis, 1995; Matsumoto, 1999; Gelfand et al, 2001). On the other hand, people who in Asia are socially oriented, emphasised being in a group, promoting each other's goals and being indirect in communication style (Hofstede, 1980; Triandis, 1995; Takano and Osaka, 1999; Matsumoto, 1999; Gelfand *et al.*, 2001).

The result of people's attitude towards aggression indicated, as Ramirez (2007) suggested, it is likely that that Asian people consider using aggressive behaviour as punishment more often than Europeans. Japanese language respondents agreed more with using physical punishment for a child and a dog, as well as expressing violent reactions for a child more often than English language respondents.

Attitudes towards HDAB were also expressed differently between English and Japanese language respondents. English language respondents showed more positive views towards controlling a dog's behaviour, i.e., ask behaviourist or shout and scold, while Japanese respondents showed a more avoiding attitude or gentle intervention, i.e., do nothing, ignore, observe, physically intervene and hold and cuddle.

For English language respondents the role of their dogs was likely to be seen as a form of company with whom they can do something together. Japanese participants were likely to expect more psychological satisfaction from their dogs, i.e., relaxation. Previous studies also suggested that the most common expectation of UK owners towards dogs was 'Companionship' (PMFA in the UK, 2012). On the other hand, a survey of dog ownership for Japanese owners, found that the most common expectation of owners towards dogs was 'Relaxation' or 'Comfort' (Ishida, 2007; Nippon Com, 2016, Okagawa, 2017).

When asking about people's handling experience with dogs; English language respondents indicated more people with a higher level of handling experience with dogs than the Japanese respondents. This result supports the previous studies that people who have more experience may also have better knowledge of a dog's behaviour (Peachy, 1993; Jagoe and Sepell, 1996; Bahlig-Pieren and Tuner, 1999; Kerswell *et al*, 2009; Costa *et al*, 2014; Fidler *et al*, 2015).

Japanese owners were likely to use positive punishment training methods for obedience training much more than English language participants. They may not use it until HDAB becomes serious (see Chapter 3.4.3), but they may use it for managing serious HDAB. Their negative (unkind), e.g., using positive punishment method attitude may lead to their lack of observation of dog's emotion and motivation. This is consistent with Ramirez's study (2007) that Asian people may consider using aggressive behaviour as punishment more often than Europeans.

In summary, many demographics and dog management factors were found to be significantly different between English and Japanese language respondents. From the findings, it is crucial to identify what cultural factor (s) have a strong effect on people's perception of HDAB. Therefore, in the next step in the analysis, the relationship between cultural factors and people's perception was investigated. This included both demographic (general culture) and dog management factors (dog management culture) influences.

#### **6.4. Internet survey for people's perception of HDAB and which cultural factors influence HDAB**

The same internet survey was used to determine people's perception of HDAB and which cultural factors influence HDAB using three sets of factors: general culture, dog management culture, and people's perception of HDAB.

As hypothesised, based on the results reported in the literature and the popular media, the results of the Internet survey showed that people were unlikely to perceive "aggressive behaviour in dogs" based on three key elements: motivation, emotion and context (Mills *et al.*, 2013; Mills and Westgarth, 2017). The study found that people did not pay attention to all elements of dog aggressive signalling and rarely recognise subtle compared to overt signs of aggression. Cultural differences were again identified. In particular, Japanese respondents were less likely to recognize mild or subtle signs (e.g., staring, displacement behaviour - looking away, tongue flick) than English language respondents. Japanese respondents tended to pay more attention to vocalisation signals than visual signals. Moreover, both population consideration for potential causes of HDAB had limitations in relation to a dog's emotion, e.g., fear, threaten and frustration (frustration in limited circumstances).

The results support previous studies which suggested that people easily identified fear (Tami and Gallagher, 2009) and tend to recognise obvious negative signs (stress) of dogs, e.g., trembling, whining (Marti *et al.*, 2012) but find it difficult to identify subtle behaviours which are also the stress signs of a dog e.g., looking away, tongue flicking (Mariti, 2012). The results also indicated that such people's perception of HDAB is likely to be affected by inconsistent and inappropriate information from the scientific literature and the popular media.

Further analysis of the internet survey data, indicated what cultural factors influenced people's perception of HDAB with 'nationality' or 'country of residence' and 'English and Japanese language respondents' as the demographic factors showing a strong effect on people's differing perception of HDAB. 'High level of experience with dogs' in the dog management items also had a stronger effect on it than other variables (The final model is described in Figure 6.1) The results indicate people who have experience with a dog may have more ability to recognize a dog's emotion (Costa *et al.*, 2014) and people who have a high level of experience with dogs may also have more knowledge of a dog's behaviour (Peachy, 1993; Jagoe and Sepell, 1996; Bahlig-Pieren and Tuner, 1999; Kerswell *et al.*, 2009; Costa *et al.*, 2014; Fidler *et al.*, 2015; Kujala *et al.*, 2012).



These variables also showed up as differences in the study of cultural influence (demographic and dog management) between English and Japanese language respondents in Chapter 3, therefore the results of the analysis in Chapter 4 support the results of Chapter 3.

Although the present study showed “nationality”, “country of residence” and “high level of experience with dogs” were the highest important factors for people’s perception of HDAB, other factors may influence it such as “the quality of relationship” between owners and dogs. In this study, the variable “Being a non-human family member who provides physical and psychological support” did not show a strong effect on people’s perception of HDAB. However, the owners who are attached their dogs attributed a wide range of emotions to their dogs (Martens *et al.*, 2015), anthropomorphism reflected people’s expression of a dog’s emotional states (Konok *et al.*, 2015). These aspects may affect people’s perception of HDAB, for example, people who are highly attached their dog or view their dogs with an anthropomorphic attitude might be more sensitive to their dogs’ emotion or perceive their dog’s behaviour more objectively or their anthropomorphic attitude may restrict the observation of HDAB. As another example, Japanese owners who own dogs for their psychological satisfaction (described in Chapter 3.4.5) may have difficulty in recognising their dog’s emotion. This different quality of relationship may influence people’s perception of HDAB and may also show cultural differences. Therefore, it may be worth investigating further.

The final investigation of the thesis developed and trialled an intervention, based on three key elements: motivation, emotion and context, to impact on accurate perception of HDAB. A video assessment of HDAB was conducted to investigate the intervention’s efficacy. In addition, how people perceive HDAB, what cultural factors affect this and the interactions between the cultural factors were also further investigated.

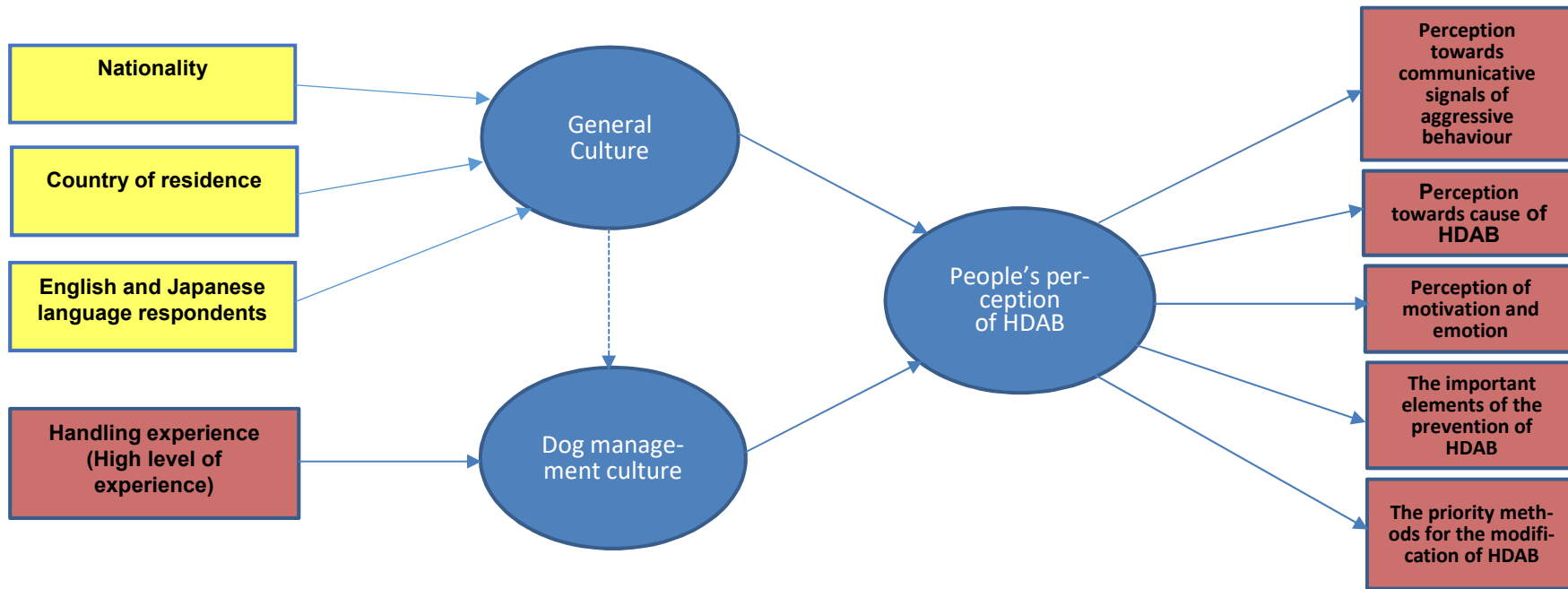


Figure 6. 1. The final model of cultural factors and people's perception of HDAB

## **6.5. Video assessment for the recognition of emotional factors in English and Japanese language respondents and implications related to the assessment**

This was the first time a study using a video assessment of HDAB, linked to an intervention treatment, has been applied to dog owners. The aim was to introduce key elements to describe HDAB based on identified motivational and emotional concepts (Mills *et al.*, 2013; Mills *et al.*, 2014; Mills and Westgarth, 2017). The analysis focused on the perception of the dog's emotions because it is the most important element to understand a dog's behaviour (Mills and Westgarth, 2017).

The results of the people's assessment of dog's emotion in the video assessment study were similar to the results of the internet survey. In general, the participants (both English and Japanese language respondents as well) did not recognise a dog's emotions appropriately and showed lower disagreement with experts. The participants' evaluation of a dog's emotions was limited, i.e., the respondents frequently answered "fear" or anxiety" but did not recognise other negative emotions, e.g., frustration in different circumstances, pain. Similarly, positive emotions such as seeking (desire) or excitement for social play, were not frequently identified presumably due to limited knowledge of a dog's motivations and emotions corresponding to behavioural signals. Moreover, participants showed difficulty in recognising subtle signs from dogs, such as displacement behaviours including; sniffing, shaking off, scratching, yawning, circling and paw lifting (Aloff, 2018; Rugaas, 2006; Marti, 2017). These results are also in accordance to the photo assessment of the Internet survey where people did not recognise dog's signalling - looking away, or a tongue flick. In particular, Japanese respondents showed lower agreement with experts in assessing a dog's emotion and triggers of the dog's behaviour than English language respondents.

Cultural factors which influence people's perception of HDAB, variables like those in the internet survey (i.e. 'Nationality' and 'professional status in relation to dogs'), showed strongest effects on people's perception of HDAB. Similarly, 'High level of experience with dogs', people who have a professional status were also strong predictors and they are likely to have more knowledge about dog's emotion. However, other cultural factors, e.g., the value / role of a dog which was identified in Chapter 3 may influence the recognition of the importance of observing dog's behaviour. Therefore, further investigation for the relationship between other cultural factors and 'High level of experience with dogs' may be useful to identify further relationship between 'High level of experience with dogs' and HDAB.

The intervention exercise of motivation and emotion basis-inference for HDAB did not have a

significant effect on the participants' assessment of the dog's emotion. This was a novel study utilising an internet exercise. Therefore issues can be hypothesised to be the cause of lack of a significant effect, such as intervention design and style, the way of transmission and the text of the material. For example, the text and voice-over in the intervention resource may have been difficult to understand, or there was insufficient information, e.g., only few examples of motivation, emotion and context provided for the participants to understand the concept. Participants also might not have been used to e-learning. People may need to obtain information visually and aurally as much as possible and more than provided. The video intervention was used with all types of participants: professional or non-professional with dogs, long or short period of working with dog, long or short time owning dog. It might have worked better for some of these groups, therefore, setting clear targets (Brelsford *et al.*, 2017) may be necessary. One possibility might be to tailor the material to the target specific groups such as high or basic level of experience with dogs' experts or non-experts.

Another aspect which may be related to people improving their understanding of dog's behaviour was the style of presentation (information processing). According to the concept of high or low context, high or low power distance, and collectivistic / individualism culture (Page and Wiseman, 1993; Hall, 1976; Gudykunst *et al.*, 1996; De Mooij and Hofstede, 2011), the intervention resource may need to encourage people by being cognitively more "engaging" based on the concept. For the low context participants, power distance and individual culture may need more text basis with more examples or details in descriptions of the key elements (motivation, emotion and context), placing emphasis on the evidence for emotions which people could not assess well. For the high context participants, power distance and collectivism culture may need the same details but using more photos or illustrations. A presenter or narrator with status appeal may also be effective for certain audiences from this group. As the previous studies suggested (Cook and Lewandowsky, 2011; Cook and Lewandowsky, 2012), it may be difficult to change people's mind once they have processed information, particularly people who have more experience with dogs. Therefore, three common strategies for presenting information (Lewandowsky *et al.*, 2012): focusing on core evidence, providing an explicit warning that the certain information might be incorrect and informing people to use an alternative explanation may help them to accept the concept of dog's motivation and emotion assessment basis.

However, according to the Internet, users have been increasing enormously (as it was described in Chapter 1.5.2), globally people's life (particularly the younger generation) may have been changing to viewing visual products more often, e.g., YouTube through PC, tablet or mobile

phone. English language respondents may also prefer to view visual material and it might be dependent on the generation or the numbers of the users in countries. Therefore it may be worth investigating how often people access YouTube or other visual products before the materials are delivered to dog owners.

Another cause of the lack of effect of the intervention may be attributed to the method of transmission of the intervention package. E-learning has become increasingly popular, particularly in higher education institutions in association with the rapid growth of internet technology (Harandi, 2015). Therefore, e-learning has a powerful impact that can develop people's knowledge and technological skills (Harandi, 2015; Ho and Kuo, 2010). However, it can also involve negative effects, e.g., computer anxiety (Saadé and Kira, 2009) or a decrease in engaging in outside activity (Nazarlou, 2013) or rely on information from the Internet sites too much. Some people are still not used to or are unfamiliar with using e-learning resources. In order to facilitate engagement with people's motivation and encourage uncomplicated progress, it is important to consider how easily accessible the package is for the participants. For example, making the material available for computer, mobile phone and tablet for convenience (as it can be accessed anywhere, at any time) and providing a single one-click link to access the videos with the questionnaire and also access the intervention resource at any time. However, the package in this study was mainly produced for a personal computer due to limitations of the project.

In order to keep the participants attentive or keep their motivation to complete the exercise, it may be beneficial to provide them with feedback after completing certain stages of the exercise. For example, by telling respondents if their answers are in accordance to what experts agree with. For the intervention resource, imparting information may lead people to improve their perception of HDAB, e.g., including in the explanation how to assess motivation and then request that respondents view the videos and answer the questions which are related to dog's emotion. This may increase the likelihood that the participants understand the concepts.

The present study allocated different video sets to the groups of participants in two stages in order to ensure the procedure was counterbalanced for "order" and "video set" effects. The effect of the intervention resource could be determined if the same video set was used for two stages without bias of quality or contents of each video.

## 6.6. Limitations and future work

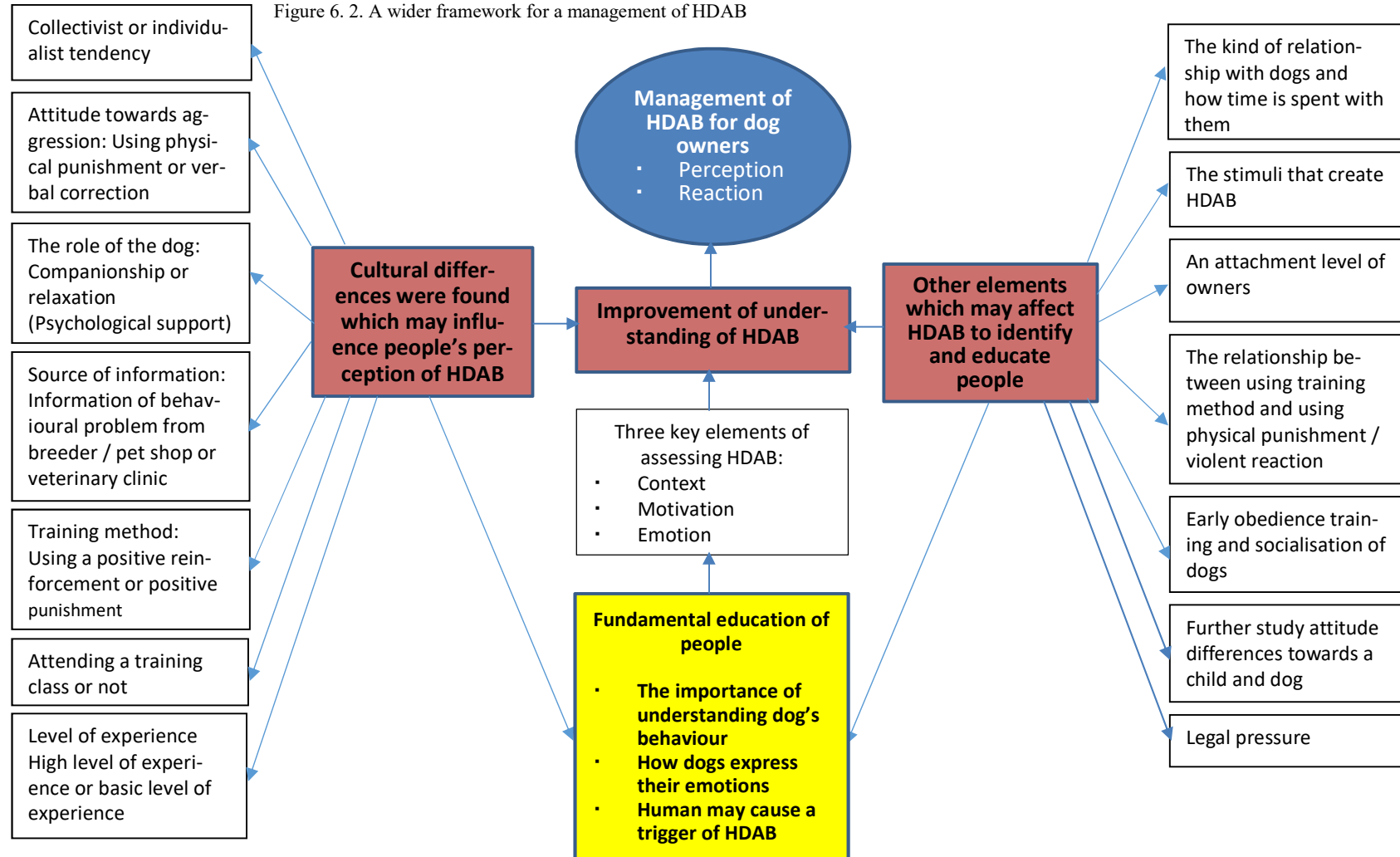
The aim of this study was to identify broadly demographic factors as part of the culture influenced HDAB and to understand differences in attitude between people from different backgrounds. The limitation is that the subject is largely grouped by e.g., English and Japanese language, country of residence and nationality which defined the concept of culture by general terms. Therefore this affected the results: some results indicated sometimes language was the strongest effect, but some other results indicated that nationality was the strongest effect towards people's perception of HDAB.

Having investigated which cultural factors influence people's perception of HDAB broadly, future study is needed to determine the causal relationship in mediation analysis between nationality (and country of residence) and handling experience with dogs in dog management factors (which were revealed as strong predictors in the internet study), and people's perception of HDAB. For example, North American and Japanese people showed significant differences when considering a dog as aggressive. The relationship could be tested, e.g., whether handling experience with dogs mediates North American or Japanese consideration of a dog as aggressive. Individual dog management factors which showed the cultural differences in Chapter 3 and 4 did not examine the relationship with people's perception of HDAB in detail. It will be worth identifying the further relationship with more questions between e.g., nationalities to clarify specific elements in culture which influence people's perception of HDAB. The results may contribute to develop a framework. As described in Chapter 5 (5.4.3, i), other elements which pay little attention to people's dog management (Figure 6. 2), may also affect the results of people's understanding of HDAB and would be worth exploring, such as the quality of relationship between owners and dogs: level of attachment towards dogs, the stimuli that create HDAB, the relationship between the training method and the physical punishment / violent reaction, further attitudes towards a child and dog (the present study found that Japanese respondents showed more violent reaction to a child than a dog), legal pressure (e.g., Dangerous Dog Acts, 1991) and socialisation of dogs. In order to develop people's management of HDAB, it may be essential to educate people in a way that not only acknowledges how to perceive HDAB but also acknowledges fundamental issues: the importance of understanding a dog's behaviour to communicate and what influences it from various aspects, particularly the stimuli by humans which often create HDAB. Therefore, the wider framework to educate people in each culture can be considered. This approach would play the role in improving people's management and preventing HDAB.

The internet questionnaire used in this study can be further improved in the future based on the results and impressions gleaned from participants. Improvements could be done by reducing the number of items to avoid participant fatigue and loss of motivation to finish. At the same time, more detailed measurements for the three elements (context, motivation and emotion) could also facilitate identifying people's perception of HDAB further to ensure they understand the full nature of the problem.

From the video assessment study, the number of questions, items, and video clips presented in the future should be also reduced to reduce participant fatigue. Any future studies using the same set of videos for each group would help to find clear efficacy of the intervention resource. Only three questions relating to dog's emotion were analysed in the study, therefore the investigation of other components related to 'Four lines evidence' (Scherer, 2005): arousal, action, tendency and communicative signals would be useful to understand people's perception of dog's emotion further. Moreover, as described in the earlier section (6.2), an analysis, taking into account experts and dog owners separately would be useful to ensure their level of understanding of key elements and the differences between them. The intervention resource should be re-designed to adjust to the characteristics of information processing based on the individual's nationality and also adjusted to the level of understanding of the participants. These changes should help improve the efficacy of the intervention of the video assessment and also enhance the individual's understanding of HDAB.

Figure 6. 2. A wider framework for a management of HDAB





## 6.7. Conclusion

This study aimed to investigate how people perceive HDAB and determine what cultural factors influence people's perception of HDAB and develop a consistent systematic framework to assess HDAB. The research contributed to identify people's insufficient perception of HDAB which may be influenced by the lack of consensus information of HDAB in the science literature and the popular media. Both cultural aspects: general demographic factors (Nationality frequently came up in the results) and dog management factors (High level of experience) had the strongest effect on people's perception of HDAB. The designed frame work which was introduced in the video assessment survey did not improve the participants' perception of HDAB significantly.

From the results, in order to develop an efficient framework, two approaches are proposed: 1. the further investigation of specific elements of cultural factors and other cultural elements which may influence HDAB and 2. educate people in individual cultures for understanding HDAB, then re-develop the framework which include information adjusted to individual cultures and convey it on the basis of the style of presentation in each culture.

Moreover, all experts; ethologists, psychologists, veterinarians, behaviourists, dog trainers should learn the scientific based information for understanding dog's behaviour and work together to convey it to people directly and also through the popular media which has an enormous impact on the public. This would be the way to spread a consistent frame work for the perception of HDAB.

## Appendix Chapter 2

Table 2. 1: Books were used in UK

<b>Title</b>	<b>Type of book</b>	<b>Author</b>	<b>Publisher</b>	<b>Date of published</b>	<b>Total page</b>
1. The perfect puppy (revised edition)	How to bring up	Gwen Bailey	An Hachette Livre UK company	May, 2008	208
2. Dogs Mind	Special feature	Bruce Fogle	Michael Joseph; New Ed edition	June, 1992	224
3. It's Me or the Dog: How to have the Perfect Pet	How to bring up	Victoria Stilwell	Collins	Sep, 2005	224
4. The dog Listener, 10 <sup>th</sup> anniversary Edition	How to modify the behavioural problem & case study	Jan Fennel	Harper	Sep, 2010	304
5. Cesar's Way: The Natural, Everyday Guide to Understanding and Correcting Common Dog Problems	How to modify the behavioural problem & case study	Cesar Millan	Hodder Paperbacks	Feb, 2008	320
6. How to Raise the Perfect Dog: Through Puppyhood and Beyond	How to bring up	Cesar Millan	Hodder & Stoughton	Feb, 2010	320
7. Why does my dog? New Edition	Case study	John Fisher	Souvenir Press Ltd	April, 1999	240
8. Behavior Adjustment Training: BAT for Fear, Frustration, and Aggression in Dogs	How to modify the behavioural problem	Grisha Stewart	Dogwise Publishing	Feb, 2012	220
9. In Defense of Dogs: Why Dogs Need Our Understanding	Special feature	John. Bradshaw	Penguin	July, 2012	352
10. Think dog	How to modify the behavioural problem & case study	John Fisher	Cassell & Co	2001	184

Table 2.2: Books were used in Japan

Title	Type of book	Author	Publisher	Date of published	Total page
1. How dogs think? : Inuno heikide usotsuku	Special feature	Stanley Coren	Bungei Shun-syu	Sep, 2007	366
2. Toy Poodle Breed book, the dog ownership : (Toy Poodle no kaikata, shitukekata)	Breed characteristics	Buji Nishikawa and Hiroshi Kobayashi	Seito Sya	Nov, 2007	190
3. Diagnoses for behavioural problems in dogs: (Inuno mondaikodo no shohosen)	How to modify the behavioural problem & case study	Noriko Nakanishi	Midori Shobo	Dec, 2011	215
4. Chihuahua Breed book, How to bring up: (Chihuahua no kaikata, shitukekata)	Breed characteristics and how to bring up	Tomoko Maeda	Seibido Shuppan	Mar, 2007	158
5. Shiba-inu Breed book, How to bring up (Chihuahua no kaikata, shitukekata)	Breed characteristics and how to bring up	Yoko Aonuma and Keiko Matsu-moto	Seibido Shuppan	Nov, 2008	160
6. Dog's well-behave depends on the way of owners:(shitukeno shikatade inuha dondon kashikokunaru)	How to bring up	Satoshi Fujii	Seishun Suppan	Jul, 2000	205
7. Owners can become the owners who is not made a fool of their dogs: (Inuni bakanisarenai kainushini nareru)	How to bring up	Satoshi Fujii	Nitto Syoin honsya	Dec, 2006	280
8. How to sort our biting habit of puppy: (koinuno kamiguse)	How to modify the behavioural problem	Jun Yazaki	Takahashi Syoten	Dec, 2007	159
9. How to sort out barking habit of puppy: (koinuno hoeguse)	How to modify the behavioural problem	Jun Yazaki	Takahashi Syoten	Jul, 2005	127
10. Dog bringing and training: (Inuno shituke & training)	How to bring up	Mashimi Nakai	Seito Shiya	Mar, 2004	199

Table 2. 3: Magazines were used in UK

<b>Name of magazine</b>	<b>Publisher</b>	<b>Annual Circulation</b>	<b>Issued used</b>	<b>Pages</b>
Dogs Today	Pet subjects Ltd	480,000	Oct, 2010; Apr, May, Oct, 2011	142
Your Dog magazine	BPG(Stamford) Ltd	360,000	Sep, 2010; May, Feb, 2011	116
Dog monthly magazine	ABM Publishing Ltd	300,000	Jun, Jul, Aug, 2011	113

Table 2. 4: Magazine were used in Japan

<b>Name of magazine</b>	<b>Publisher</b>	<b>Annual Circulation</b>	<b>Issued used</b>	<b>Pages</b>
Inuno kimochi	Benesse Corporation	160,000	Oct, 2010; Jul, Aug, Sep, Dec, 2011	117
Aikenno tomo	Seibundo Shinko Sya	75,000	Oct, 2010; Aug, Oct, 2011	196
Wan	Midori Shobou	15,000	Jan, 2011	125
Shi-Ba	Tatsumi Syuppan	70,000	Sep, 2011	118

Table 2. 5: The articles in magazine were used in the UK

<b>Title of article</b>	<b>Writer</b>	<b>Type of article</b>	<b>Contents</b>	<b>Publisher</b>	<b>Date of issue</b>	<b>Total page</b>
1. Personal Story	Victoria Stilwell Trainer /behaviourist	Personal Story	Mouthing towards owner	Dogs today	April, 2011	3 p 1,300W
2. A brewing storm:	Karen Napthine Trainer /behaviourist	Personal Story	Growling at owner's brother	Dogs today	May, 2011	2 p 1,000W
3. Manny VS Man:	Victoria Stilwell Trainer /behaviourist	Personal Story	Dog is aggressive towards male owner	Dogs today	Oct, 2010	3 p 1,250W
4. Barking up the wrong trees:	Chirag Patel Trainer /behaviourist	Special Feature	Why dogs bark? Causes: pain, anxiety, fear, threat, play, fun, enjoyment, frustration	Dogs today	Oct, 2011	3 p 1,900W
5. Crisis of confidence	Carol Price Trainer /behaviourist	Special Feature	Dogs lose their confidence easily with some triggers even early socialization was organaised	Your dog magazine	Feb, 2011	4p 1,100W
6. Dog barking	Carolyn Menteith Trainer /behaviourist	Special Feature	Dog barking for 5 reasons: excitement, fear/scared, guarding/protecting, attention seeking, boldness barking	Your dog magazine	May, 2011	3 p 2,200W
7. Dog barking: Case study	Gwen Bailey & Carolyn Menteith Trainer /behaviourist	Special Feature (about case study)	The dog barks at people and dogs when he seems them through the window	Your dog magazine	May, 2011	1 p 450w
8. Mouthing off	Adam Berral Trainer /behaviourist	Special Feature	Rehomed dog growls and barks at any stimulation	Dog monthly magazine	Aug, 2011	2 P 1,200W
9. Brush with aggression	Ross McCarthy Trainer /behaviourist	Special Feature	Rehomed dog does not like grooming and touching	Dog monthly magazine	June, 2011	2 P 1,200W
10. Guarding food	Howards Kirby Trainer /behaviourist	Q & A	The dog growls at the owner when she asks the dog to sit and wait before the meal	Dog monthly magazine	July, 2011	Third of 1 p 300W

Table 2. 6: The articles in magazine were used in Japan

<b>Title of article</b>	<b>Writer</b>	<b>Type of article</b>	<b>Contents</b>	<b>Publisher</b>	<b>Date of issue</b>	<b>Total page</b>
1. How to avoid aggression of Japanese breeds	Junko Senda Dog Trainer	Special Feature	How to train 4 steps <ul style="list-style-type: none"> <li>▪ Get used to hand</li> <li>▪ Get used to be held a color</li> <li>▪ Successful recall</li> </ul>	Wan	January, 2011	3 p 500W
2. How to handle behaviour problem for trimmers	The editor of publisher	Special Feature	<ul style="list-style-type: none"> <li>▪ What are behaviour problems for trimmer</li> <li>▪ How to treat</li> <li>▪ What is the reason</li> </ul>	Aikenno tomo	Oct, 2010	9 p 9,000W
3. Prevention of dog: Mouthing	Jun Yazaki Dog Trainer	Special Feature	<ul style="list-style-type: none"> <li>▪ What is Mouthing</li> <li>▪ Three reasons for mouthing</li> <li>▪ How to treat mouthing</li> <li>▪ How to prevent from mouthing</li> </ul>	Inuno Kimochi	Oct, 2010	7 p 5,200W
4. The behaviours which dogs show in every day life	Yukai Takeuchi Vet/ Behaviourist	Special Feature	19 behaviours – what means the behaviours	Inuno Kimochi	Aug, 2011	10 p 3,000W
5. Why dogs bark?	Hitomi Fujii Vet/ Behaviourist	Special Feature	<ul style="list-style-type: none"> <li>▪ The causes of barking</li> <li>▪ The situations</li> <li>▪ How to handle</li> </ul>	Inuno Kimochi	Sep, 2011	8 p 2,500W
6. Control mouthing, play biting	Miyuki Toda Dog Trainer	Special Feature	<ul style="list-style-type: none"> <li>▪ The causes</li> <li>▪ How to handle</li> <li>▪ What the problems are</li> </ul>	Inuno Kimochi	July, 2011	8 p 2,500W
7. How can we control dog bites?	Miyuki Toda Dog Trainer	Special Feature	<ul style="list-style-type: none"> <li>▪ How to handle</li> <li>▪ Mouthing and biting</li> <li>▪ When it happens</li> <li>▪ Owners' experience</li> </ul>	Inuno Kimochi	Dec, 2011	7 p 2,200W
8. Shiba's possessive aggression	Yukari Takeuchi Vet/ Behaviourist	Case study	<ul style="list-style-type: none"> <li>▪ Protect food bowl, bite hands</li> <li>▪ The causes</li> <li>▪ How to handle</li> <li>▪ Follow up</li> </ul>	Shi-ba	Sep, 2011	2 p 1,000W
9. Dog behaviour problems often occur	The editor of publisher	Special Feature	<ul style="list-style-type: none"> <li>▪ Barking at visitors -how to handle</li> <li>▪ Barking at door bell -how to handle</li> </ul>	Aikenno tomo	Oct, 2011	4 p 1,000W
10. Border Collie's Beh problems	Kae Makiguchi Vet/ Behaviourist	Special Feature	<ul style="list-style-type: none"> <li>▪ What is aggression?</li> <li>▪ Excessive barking</li> <li>▪ Obsessive disorder</li> </ul>	Aikenno tomo	Aug, 2011	4 p 9,000W

Table 2. 7: Internet sites: sites of ‘Dog aggression’ were used in the UK

<b>The title of a category</b>	<b>The title of site</b>	<b>Editor</b>	<b>Organizer</b>	<b>Words</b>
1. Different types of dog aggression	Stan Rawlinson Doglistener	Stan Rawlinson	Stan Rawlinson, Dog trainer <a href="http://www.doglistener.co.uk/aggression/types.shtml">http://www.doglistener.co.uk/aggression/types.shtml</a>	2300-2500W
2. Interdog and Interhuman aggression	Stan Rawlinson Doglistener	Stan Rawlinson	Stan Rawlinson, Dog trainer <a href="http://www.doglistener.co.uk/aggression/interdog.shtml">http://www.doglistener.co.uk/aggression/interdog.shtml</a>	1400-1500W
3. Correcting Dog Aggression	JRT rescue organization	No indicated	JRT rescue organization <a href="http://www.jack-russell-terrier.co.uk/advice/correcting_dog_aggression.html">http://www.jack-russell-terrier.co.uk/advice/correcting_dog_aggression.html</a>	2800-3000W
4. Dog aggression	Alpha dog behavior	Nick Johns	Nick Johns, Dog trainer, behaviorist <a href="http://www.alphadogbehaviour.co.uk/">http://www.alphadogbehaviour.co.uk/</a>	1800-2000W
5. Aggression in dogs	Bark busters	No indicated	Bark busters, Dog training & behaviour in London <a href="http://www.dogtraininglondon.co.uk/dog-aggression.html">http://www.dogtraininglondon.co.uk/dog-aggression.html</a>	2300-2500W
6. Canine aggression, FAQ	RSPCA, FAQ	David Ryan	RSPCA <a href="http://www.apbc.org.uk/articles/dog-aggression-FAQs">http://www.apbc.org.uk/articles/dog-aggression-FAQs</a>	6500-6800W
7. Dog Aggression	The Animal behaviour clinic	Dr. David Stands	Dr. David Stands <a href="http://www.problempets.co.uk/dog-aggression/default.asp">http://www.problempets.co.uk/dog-aggression/default.asp</a>	4800-5000W
8. Aggressive behaviour dogs	K9 Behaviour Services	No indicated	K9 Behaviour Services <a href="http://www.dogtalk4us.com/t5682-k9-behaviour-services">http://www.dogtalk4us.com/t5682-k9-behaviour-services</a>	8000-9000W
9. Aggression	Dog behaviour clinic	No indicated	Dog behaviour clinic <a href="http://www.dogbehaviourclinic.co.uk/aggression.htm">http://www.dogbehaviourclinic.co.uk/aggression.htm</a>	2400-2600W
10. Dog aggression to people	Canine concept	No indicated	Canine concept <a href="http://canineconcepts.co.uk/en/blog/38-dog-aggression-to-people">http://canineconcepts.co.uk/en/blog/38-dog-aggression-to-people</a>	900-1000W

Table 2. 8: Internet site: sites of ‘dog aggression’ were used in Japan

<b>The title of a category</b>	<b>The title of site</b>	<b>Editor</b>	<b>Organizer</b>	<b>Words</b>
1. The most common behaviour problem in Aggression	Behaviour modification in German way	No indicated	A veterinarian lives in Germany <a href="http://www.geocities.jp/talismankatze/therapydog.html">http://www.geocities.jp/talismankatze/therapydog.html</a>	4500-5000W
2. Dog aggression sites by a veterinarian	Evergreen dog field	Dr. Ishii	Evergreen dog field, a membership dog club <a href="http://www.edf.jp/situke07.html">http://www.edf.jp/situke07.html</a>	2000-2500W
3. Dictionary for a life with dog	Kao pet home	No indicated	Kao - cleaning products, food, pet products company <a href="http://www.kao.co.jp/pet/dog/jiten/category08/004.html">http://www.kao.co.jp/pet/dog/jiten/category08/004.html</a>	1000-1200W
4. Dog aggressive behaviour	Ryoma Animal Clinic	Ryoma Animal Clinic	Ryoma Animal Clinic <a href="http://www.ryouma.animal-clinic.jp/new-page11.html">http://www.ryouma.animal-clinic.jp/new-page11.html</a>	4000-4300W
5. Dog aggression	Happy life of dogs	No indicated	Nisshin Seifun – a flour company where sell dog food <a href="http://www.nisshin-pet.co.jp/study/dictionary/dog/category05/kougeki.html">http://www.nisshin-pet.co.jp/study/dictionary/dog/category05/kougeki.html</a>	950-1000W
6. How to sort out a dog dominance aggression	How to live with dog & cat	vet supervises	AnimalLabo, medical company <a href="http://www.animalabo.com/column/solution_dog03.php">http://www.animalabo.com/column/solution_dog03.php</a>	2300-2800W
7. Dominance aggression of dogs	Japan police dog association	No indicated	Japan police dog association <a href="http://www.policedog.or.jp/chishiki/tokusyu06.htm">http://www.policedog.or.jp/chishiki/tokusyu06.htm</a>	3000-3500W
8. Dog aggression	Kagetama dog training support	Mr. Kageyama	Kageyama dog training support <a href="http://7.quu.cc/~kageyama/main/menu.shtml">http://7.quu.cc/~kageyama/main/menu.shtml</a>	3300-3500W
9. Dog aggressive problems	Pet Life	No indicated	Petto Seikatsu – pet products company <a href="http://www.petseikatsu.com/mondai_koudou.html">http://www.petseikatsu.com/mondai_koudou.html</a>	1300-1500W
10. Dog aggressive behaviour	Dictionary of Pet disease	No indicated	Dictionary of Pet disease <a href="http://pepara.com/inu-gaku/pet-inugaku-kougekikoudou.html">http://pepara.com/inu-gaku/pet-inugaku-kougekikoudou.html</a>	8300-8500W

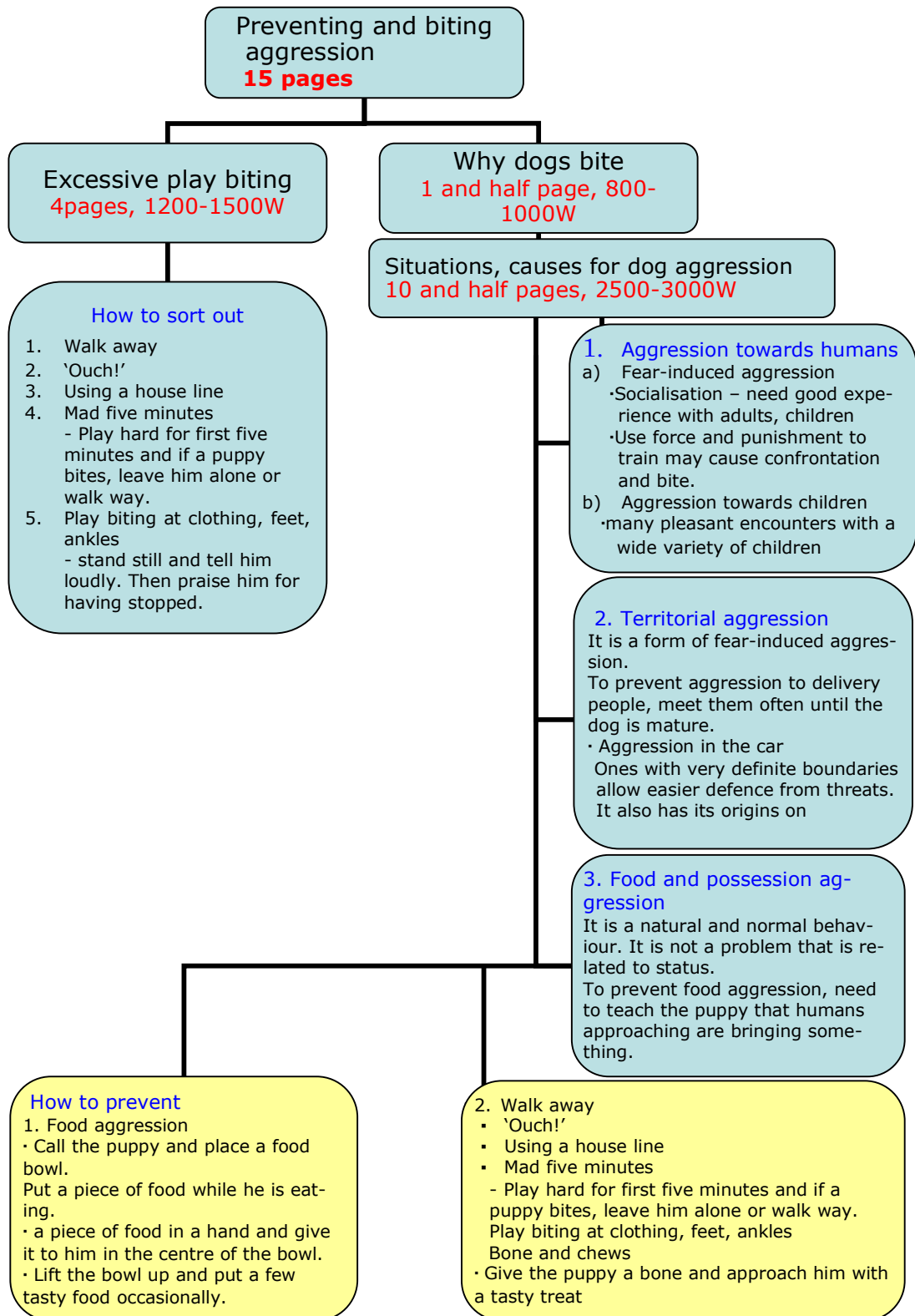


Table 2. 9: Internet site: sites of 'dog bites' were used in Japan

The title of a category	The title of site	Editor	Organizer	Words
1. Dog bites Q & A Expert answer	Pro File	No indicated	<a href="http://profile.allabout.co.jp/ask/q-8091/">http://profile.allabout.co.jp/ask/q-8091/</a>	2800-3000W
2. How to train a dog for dog bites	Owner's H.P site	No indicated	<a href="http://www.koinuno-heya.com/shitsuke/kami-guse.html">http://www.koinuno-heya.com/shitsuke/kami-guse.html</a>	900-1000W
3. Dog bite members of a family	Q & A Answers from owners	No indicated	Yahoo Japan <a href="http://detail.chiebukuro.yahoo.co.jp/qa/question_detail/q1035917180">http://detail.chiebukuro.yahoo.co.jp/qa/question_detail/q1035917180</a>	1000-1300W
4. How to sort out dog bites	Dog training	No indicated	Dog trainers H.P <a href="http://dog.12training.com/300/post-6.html">http://dog.12training.com/300/post-6.html</a>	800-900W
5. Dog behaviour problems Q & A	dogoo Q & A	No indicated	<a href="http://www.dogoo.com/cgi/soudan/forum.php?mode=past_view&amp;id=11986&amp;past_no=25&amp;res_cnt=7">dogoo http://www.dogoo.com/cgi/soudan/forum.php?mode=past_view&amp;id=11986&amp;past_no=25&amp;res_cnt=7</a>	1700-1800W
6. How to sort out dog bites'	Dog bites	Satoshi Fujii	<a href="http://www.wantu1.com/pa13/ne16.html">http://www.wantu1.com/pa13/ne16.html</a>	1700-2000W
7. Dog behaviour problems Q & A	Answers from owners	No indicate	<a href="http://www.iris-pet.com/wan/situkeqa/lfx-QA000-CATEGORI-1.htm">Pet goods company (Iris) http://www.iris-pet.com/wan/situkeqa/lfx-QA000-CATEGORI-1.htm</a>	1800-2000W
8. How to treat 'dog bites'	How to sort out dog behaviour problem	No indicated	<a href="http://inu-master.com/chew/dog-kami/">http://inu-master.com/chew/dog-kami/</a>	900-1000W
9. Dog behaviour problem Dog bites	Doctor's advice	Dr. Niwako Ogata	<a href="http://www.peppynet.com/library/archive/html/o0206.html">Petty http://www.peppynet.com/library/archive/html/o0206.html</a>	1300-1500W
10. Dog bites	Dog training	No indicated	<a href="http://www.iris-pet.com/wan/situkeqa/lfx-QA000-CATEGORI-1.htm">http://www.iris-pet.com/wan/situkeqa/lfx-QA000-CATEGORI-1.htm</a>	1800-2000W

Figure 2.1: Summary of one article about dog aggression in UK book

**1. The perfect Puppy (Revised edition) by Gwen Bailey, May 2008**



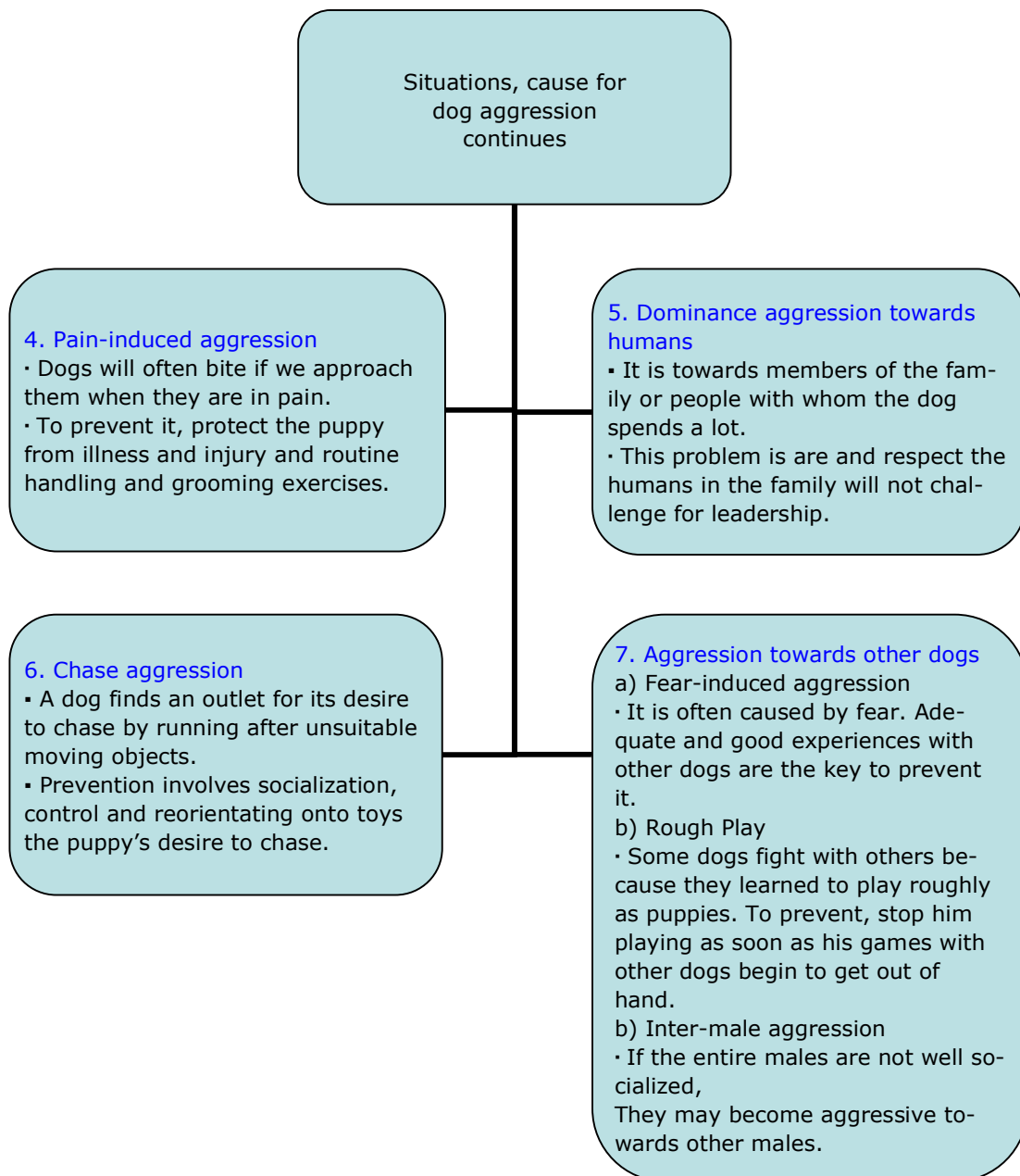
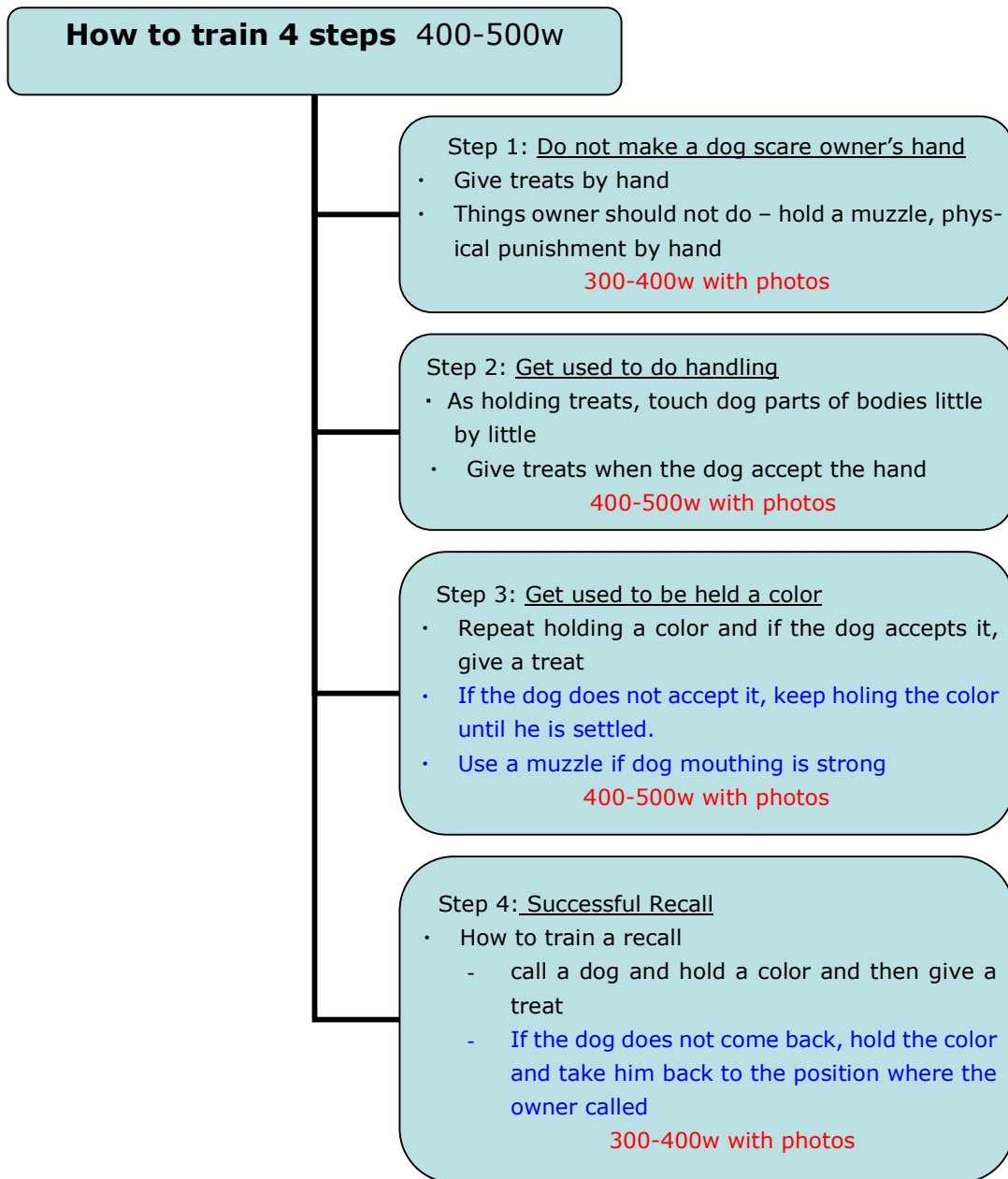


Figure 2. 2: One type (no term) of dog aggression in Japanese magazine

**Wan 01/2011 - Month of theme ‘Japanese Breed’**

**‘How to avoid aggression for Japanese breeds’ 4 pages**

1. Temperament of Japanese breed 500w
2. How to train Japanese breeds



## Appendix Chapter3

Table 3.1: Questionnaire for cultural influences on the perception of behaviour in dogs

### Questionnaire for cultural influences on the perception of behaviour in dogs

Thank you very much for agreeing to take part in this survey.

Respondents must be **over 18 years old**.

This questionnaire is focused on the perception of adults, in different countries of dog behaviour and will provide us with important information concerning culture which may influence public perception of behaviour in dogs.

The following questions ask information regarding your background and your perception of behaviour in dogs.

Your responses will be kept confidential.

### Part 1: Demographic information

**Do you own a dog?**

Yes       No

If you have owned a dog but do not own one presently or you have never owned a dog, please go to Section B.

#### Section A: Current dog owners

##### Your details

Please tick **one** that applies:

**1. What is your gender?**

Male

Female

## 2. What is your age?

\_\_\_\_\_ years old

## 3. Which country do you live in?

Pull down menu

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Afghanistan      | <input type="checkbox"/> Albania           | <input type="checkbox"/> Algeria             |
| <input type="checkbox"/> Andorra          | <input type="checkbox"/> Angola            | <input type="checkbox"/> Antigua and Barbuda |
| <input type="checkbox"/> Argentina        | <input type="checkbox"/> Armenia           | <input type="checkbox"/> Australia           |
| <input type="checkbox"/> Austria          | <input type="checkbox"/> Azerbaijan        | <input type="checkbox"/> Bahamas             |
| <input type="checkbox"/> Bahrain          | <input type="checkbox"/> Bangladesh        | <input type="checkbox"/> Barbados            |
| <input type="checkbox"/> Belarus          | <input type="checkbox"/> Belgium           | <input type="checkbox"/> Belize              |
| <input type="checkbox"/> Benin            | <input type="checkbox"/> Burma             | <input type="checkbox"/> Congo               |
| <input type="checkbox"/> Cyprus           | <input type="checkbox"/> Czech Republic    | <input type="checkbox"/> Denmark             |
| <input type="checkbox"/> Djibouti         | <input type="checkbox"/> Dominica          | <input type="checkbox"/> Dominican Republic  |
| <input type="checkbox"/> East Timor       | <input type="checkbox"/> Ecuador           | <input type="checkbox"/> Egypt               |
| <input type="checkbox"/> El Salvador      | <input type="checkbox"/> Equatorial Guinea | <input type="checkbox"/> Eritrea             |
| <input type="checkbox"/> Estonia          | <input type="checkbox"/> Ethiopia          | <input type="checkbox"/> Fiji                |
| <input type="checkbox"/> Finland          | <input type="checkbox"/> France            | <input type="checkbox"/> Gabon               |
| <input type="checkbox"/> Gambia           | <input type="checkbox"/> Georgia           | <input type="checkbox"/> Germany             |
| <input type="checkbox"/> Ghana            | <input type="checkbox"/> Greece            | <input type="checkbox"/> Grenada             |
| <input type="checkbox"/> Guatemala        | <input type="checkbox"/> Guinea            | <input type="checkbox"/> Guinea-Bissau       |
| <input type="checkbox"/> Guyana           | <input type="checkbox"/> Haiti             | <input type="checkbox"/> Honduras            |
| <input type="checkbox"/> Hungary          | <input type="checkbox"/> Iceland           | <input type="checkbox"/> India               |
| <input type="checkbox"/> Indonesia        | <input type="checkbox"/> Iran              | <input type="checkbox"/> Iraq                |
| <input type="checkbox"/> Ireland          | <input type="checkbox"/> Israel            | <input type="checkbox"/> Italy               |
| <input type="checkbox"/> Ivory Coast      | <input type="checkbox"/> Jamaica           | <input type="checkbox"/>                     |
| <input type="checkbox"/> Jordan           | <input type="checkbox"/> Kazakhstan        | <input type="checkbox"/> Kenya               |
| <input type="checkbox"/> Kiribati         | <input type="checkbox"/> Korea, North      | <input type="checkbox"/> Korea, South        |
| <input type="checkbox"/> Kosovo           | <input type="checkbox"/> Kuwait            | <input type="checkbox"/> Kyrgyzstan          |
| <input type="checkbox"/> Laos             | <input type="checkbox"/> Latvia            | <input type="checkbox"/> Lebanon             |
| <input type="checkbox"/> Lesotho          | <input type="checkbox"/> Liberia           | <input type="checkbox"/> Libya               |
| <input type="checkbox"/> Liechtenstein    | <input type="checkbox"/> Lithuania         | <input type="checkbox"/> Luxembourg          |
| <input type="checkbox"/> Macedonia        | <input type="checkbox"/> Madagascar        | <input type="checkbox"/> Malawi              |
| <input type="checkbox"/> Malaysia         | <input type="checkbox"/> Maldives          | <input type="checkbox"/> Mali                |
| <input type="checkbox"/> Malta            | <input type="checkbox"/> Marshall Islands  | <input type="checkbox"/> Mauritania          |
| <input type="checkbox"/> Mauritius        | <input type="checkbox"/> Mexico            | <input type="checkbox"/> Micronesia          |
| <input type="checkbox"/> Moldova          | <input type="checkbox"/> Monaco            | <input type="checkbox"/> Mongolia            |
| <input type="checkbox"/> Montenegro       | <input type="checkbox"/> Morocco           | <input type="checkbox"/> Mozambique          |
| <input type="checkbox"/> Nagorno-Karabakh | <input type="checkbox"/> Namibia           | <input type="checkbox"/> Nauru               |

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Nepal                 | <input type="checkbox"/> Netherlands         | <input type="checkbox"/> New Zealand                      |
| <input type="checkbox"/> Nicaragua             | <input type="checkbox"/> Niger               | <input type="checkbox"/> Nigeria                          |
| <input type="checkbox"/> Niue                  | <input type="checkbox"/> Northern Cyprus     | <input type="checkbox"/> Norway                           |
| <input type="checkbox"/> Oman                  | <input type="checkbox"/> Pakistan            | <input type="checkbox"/> Palau                            |
| <input type="checkbox"/> Palestine             | <input type="checkbox"/> Panama              | <input type="checkbox"/> Papua New Guinea                 |
| <input type="checkbox"/> Paraguay              | <input type="checkbox"/> Peru                | <input type="checkbox"/> Philippines                      |
| <input type="checkbox"/> Poland                | <input type="checkbox"/> Portugal            | <input type="checkbox"/> Qatar                            |
| <input type="checkbox"/> Romania               | <input type="checkbox"/> Russia              | <input type="checkbox"/> Rwanda                           |
| <input type="checkbox"/> Saint Kitts and Nevis | <input type="checkbox"/> Saint Lucia         | <input type="checkbox"/> Saint Vincent and the Grenadines |
| <input type="checkbox"/> Samoa                 | <input type="checkbox"/> San Marino          | <input type="checkbox"/> São Tomé and Príncipe            |
| <input type="checkbox"/> Saudi Arabia          | <input type="checkbox"/> Senegal             | <input type="checkbox"/> Serbia                           |
| <input type="checkbox"/> Seychelles            | <input type="checkbox"/> Sierra Leone        | <input type="checkbox"/> Singapore                        |
| <input type="checkbox"/> Slovakia              | <input type="checkbox"/> Slovenia            | <input type="checkbox"/> Solomon Islands                  |
| <input type="checkbox"/> Somalia               | <input type="checkbox"/> Somaliland          | <input type="checkbox"/> South Africa                     |
| <input type="checkbox"/> South Ossetia         | <input type="checkbox"/> Spain               | <input type="checkbox"/> Sri Lanka                        |
| <input type="checkbox"/> Sudan                 | <input type="checkbox"/> Suriname            | <input type="checkbox"/> Swaziland                        |
| <input type="checkbox"/> Sweden                | <input type="checkbox"/> Switzerland         | <input type="checkbox"/> Syria                            |
| <input type="checkbox"/> Taiwan                | <input type="checkbox"/> Tajikistan          | <input type="checkbox"/> Tanzania                         |
| <input type="checkbox"/> Thailand              | <input type="checkbox"/> Togo                | <input type="checkbox"/> Tonga                            |
| <input type="checkbox"/> Transnistria          | <input type="checkbox"/> Trinidad and Tobago | <input type="checkbox"/> Tunisia                          |
| <input type="checkbox"/> Turkey                | <input type="checkbox"/> Turkmenistan        | <input type="checkbox"/> Tuvalu                           |
| <input type="checkbox"/> Uganda                | <input type="checkbox"/> Ukraine             | <input type="checkbox"/> United Arab Emirates             |
| <input type="checkbox"/>                       | <input type="checkbox"/> Vatican City        |   |

**4. How long have you been living in this country?**

\_\_\_\_\_ years

## 5. What is your nationality?

Pull down menu

- |                          |                   |                          |                      |                          |                    |
|--------------------------|-------------------|--------------------------|----------------------|--------------------------|--------------------|
| <input type="checkbox"/> | Afghan            | <input type="checkbox"/> | Albanian             | <input type="checkbox"/> | Algerian           |
| <input type="checkbox"/> | American          | <input type="checkbox"/> | Andorran             | <input type="checkbox"/> | Angolan            |
| <input type="checkbox"/> | Antiguans         | <input type="checkbox"/> | Argentinean          | <input type="checkbox"/> | Armenian           |
| <input type="checkbox"/> | Australian        | <input type="checkbox"/> | Austrian             | <input type="checkbox"/> | Azerbaijani        |
| <input type="checkbox"/> | Bahamian          | <input type="checkbox"/> | Bahraini             | <input type="checkbox"/> | Bangladeshi        |
| <input type="checkbox"/> | Barbadian         | <input type="checkbox"/> | Barbudans            | <input type="checkbox"/> | Batswana           |
| <input type="checkbox"/> | Belarusian        | <input type="checkbox"/> | Belgian              | <input type="checkbox"/> | Belizean           |
| <input type="checkbox"/> | Beninese          | <input type="checkbox"/> | Bhutanese            | <input type="checkbox"/> | Bolivian           |
| <input type="checkbox"/> | Bosnian           | <input type="checkbox"/> | Brazilian            | <input type="checkbox"/> |                    |
| <input type="checkbox"/> | Bruneian          | <input type="checkbox"/> | Bulgarian            | <input type="checkbox"/> | Burkinabe          |
| <input type="checkbox"/> | Burmese           | <input type="checkbox"/> | Burundian            | <input type="checkbox"/> | Cambodian          |
| <input type="checkbox"/> | Cameroonian       | <input type="checkbox"/> | Canadian             | <input type="checkbox"/> | Cape Verdean       |
| <input type="checkbox"/> | Central African   | <input type="checkbox"/> | Chadian              | <input type="checkbox"/> | Chilean            |
| <input type="checkbox"/> | Chinese           | <input type="checkbox"/> | Colombian            | <input type="checkbox"/> | Comoran            |
| <input type="checkbox"/> | Congolese         | <input type="checkbox"/> | Costa Rican          | <input type="checkbox"/> | Croatian           |
| <input type="checkbox"/> | Cuban             | <input type="checkbox"/> | Cypriot              | <input type="checkbox"/> | Czech              |
| <input type="checkbox"/> | Danish            | <input type="checkbox"/> | Djibouti             | <input type="checkbox"/> | Dominican          |
| <input type="checkbox"/> | Dutch             | <input type="checkbox"/> | East Timorese        | <input type="checkbox"/> | Ecuadorean         |
| <input type="checkbox"/> | Egyptian          | <input type="checkbox"/> | Emirian              | <input type="checkbox"/> | Equatorial Guinean |
| <input type="checkbox"/> | Eritrean          | <input type="checkbox"/> | Estonian             | <input type="checkbox"/> | Ethiopian          |
| <input type="checkbox"/> | Fijian            | <input type="checkbox"/> | Filipino             | <input type="checkbox"/> | Finnish            |
| <input type="checkbox"/> | French            | <input type="checkbox"/> | Gabonese             | <input type="checkbox"/> | Gambian            |
| <input type="checkbox"/> | Georgian          | <input type="checkbox"/> | German               | <input type="checkbox"/> | Ghanaian           |
| <input type="checkbox"/> | Greek             | <input type="checkbox"/> | Grenadian            | <input type="checkbox"/> | Guatemalan         |
| <input type="checkbox"/> | Guinea-Bissauan   | <input type="checkbox"/> | Guinean              | <input type="checkbox"/> | Guyanese           |
| <input type="checkbox"/> | Haitian           | <input type="checkbox"/> | Herzegovinian        | <input type="checkbox"/> | Honduran           |
| <input type="checkbox"/> | Hungarian         | <input type="checkbox"/> | I-Kiribati           | <input type="checkbox"/> | Icelandic          |
| <input type="checkbox"/> | Indian            | <input type="checkbox"/> | Indonesian           | <input type="checkbox"/> | Iranian            |
| <input type="checkbox"/> | Iraqi             | <input type="checkbox"/> | Irish                | <input type="checkbox"/> | Israeli            |
| <input type="checkbox"/> | Italian           | <input type="checkbox"/> | Ivorian              | <input type="checkbox"/> | Jamaican           |
| <input type="checkbox"/> |                   | <input type="checkbox"/> | Jordanian            | <input type="checkbox"/> | Kazakhstani        |
| <input type="checkbox"/> | Kenyan            | <input type="checkbox"/> | Kittian and Nevisian | <input type="checkbox"/> | Kuwaiti            |
| <input type="checkbox"/> | Kyrgyz            | <input type="checkbox"/> | Laotian              | <input type="checkbox"/> | Latvian            |
| <input type="checkbox"/> | Lebanese          | <input type="checkbox"/> | Liberian             | <input type="checkbox"/> | Libyan             |
| <input type="checkbox"/> | Liechtensteiner   | <input type="checkbox"/> | Lithuanian           | <input type="checkbox"/> | Luxembourger       |
| <input type="checkbox"/> | Macedonian        | <input type="checkbox"/> | Malagasy             | <input type="checkbox"/> | Malawian           |
| <input type="checkbox"/> | Malaysian         | <input type="checkbox"/> | Maldivan             | <input type="checkbox"/> | Malian             |
| <input type="checkbox"/> | Maltese           | <input type="checkbox"/> | Marshallese          | <input type="checkbox"/> | Mauritanian        |
| <input type="checkbox"/> | Mauritian         | <input type="checkbox"/> | Mexican              | <input type="checkbox"/> | Micronesia         |
| <input type="checkbox"/> | Moldovan          | <input type="checkbox"/> | Monacan              | <input type="checkbox"/> | Mongolian          |
| <input type="checkbox"/> | Moroccan          | <input type="checkbox"/> | Mosotho              | <input type="checkbox"/> | Motswana           |
| <input type="checkbox"/> | Mozambican        | <input type="checkbox"/> | Namibian             | <input type="checkbox"/> | Nauruan            |
| <input type="checkbox"/> | Nepalese          | <input type="checkbox"/> | New Zealander        | <input type="checkbox"/> | Nicaraguan         |
| <input type="checkbox"/> | Nigerian          | <input type="checkbox"/> | Nigerien             | <input type="checkbox"/> | North Korean       |
| <input type="checkbox"/> | Northern Irish    | <input type="checkbox"/> | Norwegian            | <input type="checkbox"/> | Omani              |
| <input type="checkbox"/> | Pakistani         | <input type="checkbox"/> | Palauan              | <input type="checkbox"/> | Panamanian         |
| <input type="checkbox"/> | Papua New Guinean | <input type="checkbox"/> | Paraguayan           | <input type="checkbox"/> | Peruvian           |



- |                          |              |                          |                |                          |                           |
|--------------------------|--------------|--------------------------|----------------|--------------------------|---------------------------|
| <input type="checkbox"/> | Polish       | <input type="checkbox"/> | Portuguese     | <input type="checkbox"/> | Qatari                    |
| <input type="checkbox"/> | Romanian     | <input type="checkbox"/> | Russian        | <input type="checkbox"/> | Rwandan                   |
| <input type="checkbox"/> | Saint Lucian | <input type="checkbox"/> | Salvadoran     | <input type="checkbox"/> | Samoan                    |
| <input type="checkbox"/> | San Marinese | <input type="checkbox"/> | Sao Tomean     | <input type="checkbox"/> | Saudi                     |
| <input type="checkbox"/> | Scottish     | <input type="checkbox"/> | Senegalese     | <input type="checkbox"/> | Serbian                   |
| <input type="checkbox"/> | Seychellois  | <input type="checkbox"/> | Sierra Leonean | <input type="checkbox"/> | Singaporean               |
| <input type="checkbox"/> | Slovakian    | <input type="checkbox"/> | Slovenian      | <input type="checkbox"/> | Solomon Islander          |
| <input type="checkbox"/> | Somali       | <input type="checkbox"/> | South African  | <input type="checkbox"/> | South Korean              |
| <input type="checkbox"/> | Spanish      | <input type="checkbox"/> | Sri Lankan     | <input type="checkbox"/> | Sudanese                  |
| <input type="checkbox"/> | Surinamer    | <input type="checkbox"/> | Swazi          | <input type="checkbox"/> | Swedish                   |
| <input type="checkbox"/> | Swiss        | <input type="checkbox"/> | Syrian         | <input type="checkbox"/> | Taiwanese                 |
| <input type="checkbox"/> | Tajik        | <input type="checkbox"/> | Tanzanian      | <input type="checkbox"/> | Thai                      |
| <input type="checkbox"/> | Togoese      | <input type="checkbox"/> | Tongan         | <input type="checkbox"/> | Trinidadian or Tobagonian |
| <input type="checkbox"/> | Tunisian     | <input type="checkbox"/> | Turkish        | <input type="checkbox"/> | Tuvaluan                  |
| <input type="checkbox"/> | Ugandan      | <input type="checkbox"/> | Ukrainian      | <input type="checkbox"/> | Uruguayan                 |
| <input type="checkbox"/> | Uzbekistani  | <input type="checkbox"/> | Venezuelan     | <input type="checkbox"/> | Vietnamese                |
| <input type="checkbox"/> | Welsh        | <input type="checkbox"/> | Yemenite       | <input type="checkbox"/> | Zambian                   |
| <input type="checkbox"/> | Zimbabwean   |                          |                |                          |                           |

**6. What is your ethnic group?**

- Caucasian
- Native American/Indigenous
- Pacific Islander
- Latino/Hispanic
- Middle Eastern
- African
- Caribbean
- Asian
- Mixed multiple ethnic group
- Other \_\_\_\_\_
- Would rather not say

\*Additional information about your race/ethnicity you would like to add: \_\_\_\_\_

**7. What best describes the area where you live?**

- Urban (a large town/city)
- Suburban (outskirts of a large town or city)
- Semi urban (a small town/village )
- Rural (all those people not included within an urban /semi urban/suburban area)

**8. Type of home**

- Detached house (house is within its own ground/garden)
- Semi-detached house (house is attached to the one next door)

- Terraced house (house in a row)
- Apartment/ Flat with a garden
- Apartment/ Flat without a garden
- Other

**9. What is your current work status?**

- Permanent paid employee
- Temporary paid employee
- Self employed
- Part time employed
- Unemployed
- Retired employee
- Full-time home-maker
- Full- time Student
- Part-time student
- Other \_\_\_\_\_

**10. What is your personal relationship / status?**

- Living with an adult partner in a long term relationship, e.g., married
- Living without an adult partner
- Living with parents / guardian etc.
- Living in a commune
- Other \_\_\_\_\_
- Would rather not say

**11. How many children under 12 years old live in your household?**

- None
- One
- Two
- Three
- Four or more

**12. How many people between 13- 18 years old live in your household?**

- None
- One
- Two
- Three
- Four or more

**Your dog ownership**

**13. How many dogs do you own?**

\_\_\_\_\_

**14. Have you owned dogs previously?**

Yes     No

**15. Are you**

Dog owner     Breeder     Dog owner/breeder

**15. What is the breed/ type of your current dog/s?**

**Please describe/ identify the breed/type of your current dog/s and indicates their gender, age and neuter status. If you have more than 4 dogs, please give details of your two oldest and two youngest dogs in the box below:**

Name of breed/ type	Gender	Age	Neu/ spa
1. _____			
2. _____			
3. _____			
4. _____			

**16. How many years in total have you been a dog owner?**

\_\_\_\_\_ years

**17. Where did you obtain your dogs from?**

**Please tick all that apply:**

- Breeders
- Friend / family
- Found/ rescued by chance
- Pet shops / commercial supplier
- Shelters / animal rescue organizations
- Other \_\_\_\_\_

**18. What was the age of your dog/s when you acquired your dog/s?**

**Please tick all that apply:**

- Under 6 weeks
- 7 weeks -12 weeks
- 13 weeks – 24 weeks
- 7 months – 1 year
- 2 - 6 years
- 7 - 10 years
- 11 or more years

**19. Which of the following did you seek information about prior to obtaining your dog?**

**Please tick all that apply:**

- Breeders
- Pet shops
- Shelters / animal rescue organizations
- Breed, breed traits (exercise, size, coat, colour, diseases)
- Breed specific behaviour, temperament
- Health management. i.e. veterinary services - vaccinations
- Information relating to training methods
- Kennelling and fencing for containment
- Food/ Treats
- Goods/ Accessories
- Veterinary clinics
- Trainers
- Other \_\_\_\_\_

**20. What were the most important factors in choosing your dog?**

**Please tick all that apply:**

- Breed type
- Price
- Size
- Breed traits
- Gender
- Colour
- Temperament
- Behaviour
- Body odors

- Appearance
- Quantity of exercise
- Physical traits
- Good health
- Coat type
- Quantity of grooming
- Other \_\_\_\_\_

**21. In which of the following activities do you spend most time daily with your dog?  
Please rank in order from one to three which you consider are the three most frequent activities from the pull down menu (one is the most frequent activity – three is the third most frequent activity):**

- \_\_\_ Grooming
- \_\_\_ Feeding
- \_\_\_ Bathing
- \_\_\_ Taking part in obedience training classes
- \_\_\_ Dressing my dog up
- \_\_\_ Sleeping together in bed
- \_\_\_ Visiting friends together
- \_\_\_ Going for a family day trip
- \_\_\_ Taking part in sport activities, e.g., agility, fly ball
- \_\_\_ Walking my dog
- \_\_\_ Walking my dog in his/her stroller
- \_\_\_ Playing with toys together in the house
- \_\_\_ Keeping me company when I drive to go shopping / other places
- \_\_\_ Playing with toys together outside/ garden
- \_\_\_ Being close to each other (spending time in each other's company)
- \_\_\_ Going to dog friendly places together i.e. café, dog run, hotel
- \_\_\_ Other \_\_\_\_\_

**Regarding your experience of dog training**

**22. Have you had experience of dog training classes?**

Yes       No

\*Respondents indicating “no” will be directed to the “If no” question automatically

**If yes, how much experience of dog training do you estimate you may have?**

**Please tick one option only**

- I am competent to attend to basic issues i.e. feeding, walking and toileting my dog
- I am competent to train my dog to a basic level of obedience. i.e. sit, down, wait

- I am competent to train my dog to a high level of obedience
- I am competent to take part in local obedience competitions
- I am competent to take part in international competitions
- Other \_\_\_\_\_

**If yes, what sort of training classes have you participated in?**

**Please tick all that apply:**

- Puppy socialisation class
- Basic obedience class
- Intermediate obedience class/ advanced obedience class.  
i.e. recognized qualification such as the kennel club good citizen scheme or equivalent
- Agility Class
- Dog dance class
- Sports Class e.g. fly ball, Frisbee
- Schutzhund
- One to one obedience tuition / private lesson
- Other \_\_\_\_\_

**If yes, What influenced you when choosing that class?**

**Please tick all options that apply:**

- The use of shock collars
- The use of check/choke chains
- The opportunity for my dog to gain socialisation
- Recommendations from other dog owners
- The opportunity to enjoy working with my dog
- The opportunity to develop my own training skills
- The opportunity to increase the learning ability of my dog
- The opportunity for my dog to enjoy interaction with other dogs
- The opportunity for my dog to enjoy interaction with other people
- The reputation of the trainer
- Other \_\_\_\_\_

**Regarding handling difficult behaviour in a dog**

**23. Have you had experience of your dog / dogs exhibiting growling, snarling, snapping or biting behaviour towards an adult /child?**

Yes       No

**If yes, towards whom does current your dog exhibit this behaviour?**

**Please tick all that apply:**

- A family member
- Unfamiliar person
- Familiar but non household member (i.e. friends, relatives)

**24. If you have experienced the above described behaviour in your dog, have you sought specialist behavioural advice?**

Yes       No

**If yes, how was the behaviour after receiving the behavioural advice?**

**Please tick one option only:**

- It has been resolved
- It has not changed
- I am still using the behavioural service
- I resigned myself to living with the behavioural problem
- It became worse than before
- Other \_\_\_\_\_

## **Part 2: Perception of behaviour in dogs**

We would like your view/opinion on behaviour in dogs

### **Section 1: Communication signals and other factors related to behaviour**

**25. Which of the following influences you in determining if a dog is displaying aggressive behaviour?**

**Please tick all that apply:**

- \_\_\_ Vocalization (i.e. barking, growling)
- \_\_\_ Facial expression (i.e. ears up / forward, back, eyes narrowed, white of eyes shown)
- \_\_\_ Body posture (i.e. head position, tail position, higher / lower body position)
- \_\_\_ Movement (i.e. moving forward/ backward, moving away)
- \_\_\_ Context (What is happening/occurring in the immediate area)
- \_\_\_ State of Arousal (i.e. hackles/hair raised, lunging forward, body tensed)
- \_\_\_ Other \_\_\_\_\_

**26. Which of the following behaviour in dogs would you consider as aggressive?**

**Please tick one option that reflects your opinion:**

**DF=Definitely, VL=Very likely, QL=Quite likely, PL=Possibly likely, NL=Not likely**

	<b>DF</b>	<b>VL</b>	<b>OL</b>	<b>PL</b>	<b>NL</b>
Baring teeth					
Snarling					
Nipping					
Staring					
Growling					
Snapping					
Biting					
Lunging					
Barking					

**27. Which signals may predict that a dog might bite?**

**Please tick those which you feel are most relevant:**

<input type="checkbox"/>	Squinting eyes	<input type="checkbox"/>	Blinking	<input type="checkbox"/>	Looking away
<input type="checkbox"/>	A direct stare	<input type="checkbox"/>	Open eyes	<input type="checkbox"/>	White around the eyes
<input type="checkbox"/>	Head turned to the side	<input type="checkbox"/>	Head down	<input type="checkbox"/>	Folding the ears back
<input type="checkbox"/>	Ears pricked	<input type="checkbox"/>	Baring teeth	<input type="checkbox"/>	Open mouth and retracted lips
<input type="checkbox"/>	Tail tucked / down	<input type="checkbox"/>	Tail up / stiff	<input type="checkbox"/>	Tail slowly wagging
<input type="checkbox"/>	Weight forward	<input type="checkbox"/>	Weight back	<input type="checkbox"/>	Body/muscle tension
<input type="checkbox"/>	Hair raised on shoulder / back	<input type="checkbox"/>	Growling	<input type="checkbox"/>	Barking
<input type="checkbox"/>	Snarling	<input type="checkbox"/>	Lunging	<input type="checkbox"/>	Yawning
<input type="checkbox"/>	Shaking	<input type="checkbox"/>	Circling	<input type="checkbox"/>	Paw lifting
<input type="checkbox"/>	Tongue flick	<input type="checkbox"/>	Sniffing	<input type="checkbox"/>	Scratching
<input type="checkbox"/>	Other _____	<input type="checkbox"/>		<input type="checkbox"/>	



## Section 2: Elements of behaviour in contexts

**28. In the following situations, what factors do you think are most likely to cause a reactive behaviour in a dog?**

**Please rank in order from one to three from the following lists (one is the most likely – three is the least likely):**

1. An owner is walking with their dog on a lead in a park and an unfamiliar person approaches the dog. The dog growls and snaps at him.

Pull down menu ranking 1-3

- The dog is feeling pain
- The dog does not like the person
- The dog is afraid of the person
- The dog is challenging the person
- The dog is playing with the person
- The dog displayed the behaviour accidentally
- The dog is feeling threatened by the person
- The dog is desiring interaction with the person for pleasure
- The dog is frustrated by the prospect of losing something
- The dog is frustrated by the inability to interact with the person
- The dog is frustrated by the limits of the available free space in which to operate
- Other \_\_\_\_\_
- I am not sure

2. A dog is in a fenced garden or in a house and sees someone outside (i.e. the postman, or a delivery person). The dog dashes up to the boundary and barks at the person until the person goes away.

Pull down menu ranking 1-3

- The dog is feeling pain
- The dog does not like the person
- The dog is afraid of the person
- The dog is challenging the person
- The dog is playing with the person
- The dog displayed the behaviour accidentally
- The dog is feeling threatened by the person
- The dog is desiring interaction with the person for pleasure
- The dog is frustrated by the prospect of losing something
- The dog is frustrated by the inability to interact with the person
- The dog is frustrated by the limits of the available free space in which to operate
- Other \_\_\_\_\_
- I am not sure

3. An owner is using a toy to play a game of “tug of war” with his/her pet dog. The dog starts to growl and it bites the owner’s hand when the owner tries to pull the toy away.

Pull down menu ranking 1-3

- The dog is feeling pain
- The dog does not like the person
- The dog is afraid of the person
- The dog is challenging the person
- The dog is playing with the person
- The dog displayed the behaviour accidentally
- The dog is feeling threatened by the person
- The dog is desiring interaction with the person for pleasure
- The dog is frustrated by the prospect of losing something
- The dog is frustrated by the inability to interact with the person
- The dog is frustrated by the limits of the available free space in which to operate
- Other \_\_\_\_\_
- I am not sure

### Section 3: Emotion and motivation in dogs with pictures

29. In your view / opinion what emotion and motivation are the dogs showing in each photo? Please tick one emotion and one motivation option for each photo.

a)



Emotion

- I am happy with the situation
- I am relaxed at the moment
- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone



Emotion

- I am happy with the situation
- I am relaxed at the moment
- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone

c)



Emotion

- I am happy with the situation
- I am relaxed at the moment
- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone

d)



Emotion

- I am happy with the situation
- I am relaxed at the moment
- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone

e)



Emotion

- I am happy with the situation
- I am relaxed at the moment
- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone

f)



Emotion

- I am happy with the situation
- I am relaxed at the moment
- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone

g)



Emotion

- I am happy with the situation
- I am relaxed at the moment

- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone

h)



Emotion

- I am happy with the situation
- I am relaxed at the moment
- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone

i)



Emotion

- I am happy with the situation
- I am relaxed at the moment
- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone

j)



Emotion

- I am happy with the situation
- I am relaxed at the moment



- I am anxious with the situation
- I am scared by someone / something
- I am frustrated by the situation

Motivation

- I want to get away from this situation
- I want to stay in this situation
- I want to keep interacting
- I am observing how this situation develops
- I want to be left alone

**Section 4 Prevention and modification of aggressive behaviour**

**30. Listed below are 6 potential factors involved in the prevention of aggressive behaviour by dogs towards people. Please rank in order from one to three which you think are the three most important factors that help to prevent such behaviour:**

- \_\_ Obedience training from an early age
- \_\_ Preventing the dog having contact with people
- \_\_ Learning training methods to control your dog
- \_\_ Opportunities to socialise dogs with people from an early age
- \_\_ Understanding the reasons (motivations) why dogs develop aggressive behaviour
- \_\_ Learning to recognize/read canine body language, signalling and emotion
- \_\_ Other \_\_\_\_\_

**31. What would you consider to be the priority when choosing a method for the modification of aggressive behaviour by dogs towards people?**

**Please rank in order from one to three which you think are the three most important factors that help to modify this problem:**

- An inexpensive method
- A method that will easily control the dog
- A method that helps the dog to easily obey its owner
- A method that will quickly resolve the behavior problem
- A method that does not cause stress to the dog (a kind way)
- A method that does not damage the relationship between the dog and its owner
- Competency or expertise of the person who will advise me
- Other \_\_\_\_\_

### **Part 3: Cultural factors which may influence your perception of behaviour in dogs**

Personal experiences of aggressive behaviour in dogs

#### **Section 1: Your relationship with your dog**

##### **32. Which of the following best describes your dog?**

**Please tick one option only:**

- My pet
- A guard
- A friend
- My partner
- A non-human family member
- An adult member of the family
- A baby /child member of the family
- Working partnership (i.e. police dog, herding dog)
- Assistance partnership
- Gundog/sporting dog
- Other \_\_\_\_\_

##### **33. Which of the following best describes the advantage having a dog?**

**Please rank in order from one to three the options which you consider are the most relevant:**

- Relaxation
- Leisure activities
- Companionship
- Emotional enrichment
- A challenge and responsibility
- Provides security and protection
- Provides assistance
- Prestige (something to be proud of)
- Facilitates social interaction with others
- Encourages a healthy, active lifestyle
- Helps to teach children responsibility and respect for animals

#### **Section 2: Methods of training and handling a dog**

##### **34. What do you think is the role of dog obedience training for dog owners?**

**Please tick the box that indicates how strongly you agree or disagree with the following statements:**

SD=Strongly Disagree, DA=Disagree, PD=Partly Disagree, A=Agree, PA=Partly Agree, SA=Strongly Agree

	SD	DA	PD	A	PA	SA
Obedience training for a dog is not so important because I like dogs to live as they choose						
Obedience training for a dog is important for owners to teach their dogs the rules about how to behave with other people and dogs						
Obedience training for a dog is important for owners to communicate effectively with their dogs						
Obedience training for a dog is not necessary for owners unless their dogs cause injury to people						
Obedience training is important for owners to prevent behaviour problems						
Obedience training for a dog is not necessary for owners unless their dogs bite an adult /child						
Obedience training is important because it is a legal requirement of the country I live in						

**35. In your view, which of the following is the most effective method to use in training a dog in the situation described in a) and b)? Please tick all that apply:**

**a) To teach a dog to sit**

- Toys as a reward
- Ignore the behaviour
- Physically punish the dog for non-compliance
- Scold the dog for disobedience
- Control the dog with a choke chain
- Verbal praise for the desired behaviour
- Scold the dog for inappropriate behaviour
- Stroke the dog for the desired behaviour
- Control the dog with a flat collar and lead
- Treats as a reward (including clicker training the dog)
- Use an electric collar
- Use sound / smell aversion collar
- Physically manipulate the dog into desired posture
- Others \_\_\_\_\_

**b) To resolve the problem of your dog (on a lead) lunging towards people while on a lead**

- Toys as a reward
- Ignore the behaviour
- Physically punish the dog
- Scold the dog for disobedience
- Control the dog with a choke chain
- Verbal praise for the desired behaviour
- Scold the dog for inappropriate behaviour
- Stroke the dog for the desired behaviour
- Control the dog with a flat collar and lead
- Treats as a reward (including clicker training the dog)
- Use an electric collar
- Use sound / smell aversion collar
- Physically manipulate the dog into desired posture
- Others \_\_\_\_\_

**36. If a dog bit a person, what would you consider to be the most appropriate course of action? Please tick one option only:**

- Punish the dog
- Not do anything
- Rehome the dog
- Muzzle the dog
- Euthanize the dog
- Avoid the situation
- Ask a dog trainer for advice
- Ask a behaviourist for advice
- Leave the dog with a trainer to address the problem
- Research on the Internet for methods on how to handle the behaviour
- Try to observe the dog carefully to recognize the signals before it displays the behaviour
- Others \_\_\_\_\_

**Section 3: Source of Knowledge**

**37. On which of the following do you regularly research or seek information from?**

**Please tick all options that apply: \*Experts=vets, trainers, behaviourists \*Type of information: 'Breeder/ pet shop' for Japanese questionnaire**

	Not Applicable	Television	Book	Magazine	Newspaper	Internet	Pet shop	Breeder	Friends	Events	Experts	Other
Breed / type/ characteristics												
Breeder												
Training information												
Food/ treats												
Veterinary information												
Veterinary clinics												
Dog friendly places												
Behaviour problems												
Animal rescue centers / shelters												
Bedding, leads, toys, accessories												
Grooming												

**38. If your dog developed a behaviour problem, where would you seek help to resolve it? Please tick your preferred option:**

- Friend
- Trainer
- Behaviourist
- Pet shop
- Your own skill
- Media (Internet, TV, magazines, books)
- Other \_\_\_\_\_

**39. What makes you prefer the source?**

**Please tick all that apply:**

- \_\_\_ Because it is reliable
- \_\_\_ Because it is convenient
- \_\_\_ Because it is easy to do
- \_\_\_ Because it is knowledgeable
- \_\_\_ Because it has more experience
- \_\_\_ Because I am embarrassed to ask for help
- \_\_\_ Because it provides anonymity
- \_\_\_ Because it is not expensive
- \_\_\_ Other

**Section 4: Your opinion on behaviour in dogs**

**40. What is your opinion on a dog displaying aggressive behaviour towards people?**

**Please tick the box to indicate how strongly you agree or disagree with each of the following statements:**

**SD=Strongly Disagree, DA=Disagree, PD=Partly Disagree, A=Agree, PA=Partly Agree, SA=Strongly Agree**

	<b>SD</b>	<b>DA</b>	<b>PD</b>	<b>A</b>	<b>PA</b>	<b>SA</b>
It should not occur in any situation.						
It is not a problem until the dog bites a person causing significant injury						
It can occur as a result of a breed characteristic						
It is always the victim's fault.						
It is the owner's fault in all situations						
It is always the dog's fault						
It can be attributed to the circumstances						
It should have strong legally enforceable penalties						

**41. How do you imagine you would feel when walking on a lead, if your dog started growling and lunging at another person who was approaching while you were walking with your dog on a lead in a public place?**

**Please rank in order from one to three from the following answers (one is the most likely - three is the least likely):**

- I would not want to stress my dog
- I would be afraid that the person might complain
- I believe that such behavior is natural to a dog
- I would not want to cause irritation to other people
- I would feel embarrassed with other people around
- I would not want to make my dog's behaviour worse
- I would not want to be badly thought of by other people
- I would believe that the victim had provoked this behaviour
- Others \_\_\_\_\_

**42. What do you think would be your reaction to the situation?**

**Please rank in order from one to three from the following answers (one is the most likely - three is the least likely):**

- I would do nothing
- I would ignore the behavior
- I would pull the lead to control my dog
- I would apologize to the person
- I would hold and cuddle my dog
- I would use treats to control my dog
- I would shout at / scold my dog
- I would blame the victim for provoking my dog
- I would be panicking and not be able to do anything
- I would try to take the dog away from the situation
- I would physically intervene by smacking, holding the dog's muzzle, physically manhandling my dog to force him/ her to behave
- I do not know how I might react
- Other \_\_\_\_\_

**43. What do you think would be your reaction if your dog bit your hand while you were trying to take your dog's favorite toy away from it?**

**Please rank in order from one to three from the following answers (one is the most likely - three is the least likely):**

- I would do nothing
- I would ignore the behavior
- I would hold and cuddle my dog
- I would walk away from the situation
- I would shout at / scold my dog
- I would blame myself for provoking my dog
- I would panic and be unable to do anything

- I would try to take the dog away from the situation
- I would physically intervene by smacking, holding the muzzle, physically manhandling my dog to force him/her to behave
- I do not know how I might react
- None of above \_\_\_\_\_

**Section 5: Your wider attitude towards interactions**

**44. Which of the following would you consider to be act of aggression by someone towards a human member of your family?**

**Please tick the box to indicate how strongly you agree or disagree with each of the following statements:**

**SD=Strongly Disagree, DA=Disagree, PD=Partly Disagree, A =Agree, PA=Partly Agree, SA=Strongly Agree**

	<b>SD</b>	<b>DA</b>	<b>PD</b>	<b>A</b>	<b>PA</b>	<b>SA</b>
Pushing						
Spitting						
Swearing						
Arguing						
Sarcasm						
Verbal threats						
Shouting, screaming						
Clenching a fist						
Slamming a door						
Punching a wall						
Pulling clothes or hair						
Throwing objects						
An action that makes them annoyed (leaving mess, taking things away)						
Failure to follow instruction						
Ignoring the opinion of other people						
Spreading derogatory rumor						
Challenging another's opinion						



**45. What do you think regarding the use physical / verbal punishment with children?**

Please tick the **box** to indicate how **strongly you agree or disagree** with each of the following statements:

SD=Strongly Disagree, DA=Disagree, PD=Partly Disagree, A =Agree, PA=Partly Agree, SA=Strongly Agree

	SD	DA	PD	A	PA	SA
Physical punishment - (i.e. smack, hit) is sometimes important to stop/ correct inappropriate behaviour by children						
Physical punishment (i.e. smack, hit ) is sometimes important to teach children what is wrong						
Physical punishment is required when children do not listen to verbal correction.						
Physical punishment is required when children repeatedly do something wrong						
It is better to teach children that something is wrong by taking away privileges than by using physical punishment.						
Physical punishment should never be used as it is a parents' responsibility to teach children that harming another is immoral.						
Physical punishment is sometimes important to teach children what is acceptable behaviour in society						
Verbal correction (i.e. telling off) is important to stop/ correct inappropriate behaviour by children.						
Verbal correction (i.e. telling off,) is important to teach children what is wrong.						
It is better to teach children that something is wrong by taking away privileges than using verbal correction.						
Verbal correction (i.e. telling off) should not be used as it is the parents responsibility, to teach children that harming another is immoral						
Verbal correction is always important to teach children what is acceptable behaviour in society						

**46. If you had a 2 year child, how would you react if your child did something wrong/ irritating i.e. damaging something important to you? Please tick one option only:**

- Scold him / her
- Smack him / her
- Ignore him / her

- Hit / kick him / her
- Give comfort to him / her
- Shout / scream at him/ her
- Do nothing, blame myself
- Throw an object at him / her
- Shut him /her out from the room
- Take away something he likes
- Send him / her out to another room
- Other \_\_\_\_\_

**47. How would you react when your 2 year old dog does something wrong i.e. damaging something important to you? Please tick one option only:**

- Scold him / her
- Smack him / her
- Ignore him / her
- Hit / kick him / her
- Give comfort to him /her
- Shout / scream at him/ her
- Do nothing, blame myself
- Throw an object at him / her
- Shut him /her out from the room
- Take away something he likes
- Send him/ her out to another room
- Other \_\_\_\_\_

**48. What do you think about using physical / verbal punishment with dogs?**

**Please tick the box to indicate how strongly you agree or disagree with each of the following statements:**

**SD=Strongly Disagree, DA=Disagree, PD=Partly Disagree, A =Agree, PA=Partly Agree, SA=Strongly Agree**

	<b>SD</b>	<b>DA</b>	<b>PD</b>	<b>A</b>	<b>PA</b>	<b>SA</b>
Physical punishment - (i.e. smack, hit) is sometimes important to stop/ correct inappropriate behaviour by dogs						
Physical punishment (i.e. smack, hit ) is sometimes important to teach dogs what a rule is						
Physical punishment is required when dogs do not obey a command.						
Physical punishment is required when dogs repeatedly do something wrong						

It is better to teach dogs that something is wrong by taking away privileges (i.e. confining to another room) than using physical punishment						
Physical punishment should never be used to teach dogs that something is wrong						
Physical punishment is sometimes important to teach dogs what is a rule in their life						
Verbal correction (i.e. shouting, telling off) is important to stop/ correct inappropriate behaviour by dogs						
Verbal correction (i.e. shouting, telling off,) is important to teach dogs what is wrong						
It is better to teach dogs that something is wrong by taking away privileges (i.e. confining to another room) than using verbal correction						
Verbal correction (i.e. shouting, telling off) should not be used to teach dogs that something is wrong						
Verbal correction is important to teach dogs what a rule is						

Table 3.2. Fifty “Nationality” of dog owners responding to the English questionnaire

Nationality	Frequency	Percent
British	156	13.6
American	382	33.3
Argentinean	1	.1
Australian	88	7.7
Austrian	2	.2
Belgian	4	.3
Brazilian	1	.1
Canadian	75	6.5
Chilean	2	.2
Chinese	3	.3
Colombian	1	.1
Croatian	2	.2
Czech	2	.2
Danish	5	.4
Dutch	12	1.0
Egyptian	1	.1
Finnish	9	.8
French	4	.3
German	28	2.4
Greek	3	.3
Hungarian	11	1.0
Icelander	2	.2
Indian	3	.3
Indonesian	1	.1
Irish	14	1.2
Israeli	1	.1
Italian	205	17.9
Ivorian	1	.1
Lithuanian	1	.1
Malaysian	1	.1
Mexican	5	.4
New Zealander	7	.6
Northern Irish	1	.1
Norwegian	16	1.4
Pakistani	1	.1
Polish	11	1.0
Portuguese	38	3.3
Romanian	2	.2
Russian	1	.1
Scottish	2	.2
Serbian	3	.3
Slovenian	4	.3
South African	3	.3
Spanish	8	.7
Swedish	7	.6
Swiss	7	.6
Turkish Tuvaluan	1	.1
Ukrainian	2	.2
Welsh	3	.3
Japanese	3	.3
<b>Total</b>	<b>1146</b>	<b>100.0</b>

Table 3.3. Two “Nationality” of dog owners responding to the Japanese questionnaire

Nationality	Frequency	Percent
Chinese	1	.2
Japanese	631	99.8
<b>Total</b>	<b>632</b>	<b>100.0</b>

Table 3.4. Forty nine “Country of residence” of dog owners responding to the English questionnaire

<b>Country of residence</b>	<b>Frequency</b>	<b>Percent</b>
United Kingdom	145	12.7
Argentina	1	.1
Armenia	1	.1
Australia	101	8.8
Austria	4	.3
Bahrain	1	.1
Belgium	3	.3
Denmark	4	.3
Egypt	1	.1
Finland	11	1.0
France	6	.5
Germany	23	2.0
Greece	4	.3
Guinea	1	.1
Hungary	11	1.0
Iceland	3	.3
India	1	.1
Ireland	12	1.0
Israel	1	.1
Italy	201	17.5
Kenya	1	.1
Malaysia	1	.1
Mexico	6	.5
Netherlands	10	.9
New Zealand	8	.7
Norway	15	1.3
Pakistan	1	.1
Poland	6	.5
Portugal	33	2.9
Romania	2	.2
Serbia	2	.2
Slovakia	3	.3
Slovenia	4	.3
South Africa	2	.2
Spain	9	.8
Sweden	5	.4
Switzerland	6	.5
Thailand	1	.1
United States	411	35.9
Uzbekistan	1	.1
Botswana	1	.1
Brazil	1	.1
Canada	74	6.5
Chile	2	.2
Colombia	1	.1
Croatia	2	.2
Lithuania	1	.1
Japan	2	.2
<b>Total</b>	<b>1146</b>	<b>100.0</b>

Table 3.5. Forty nine “Country of residence” of dog owners responding to the Japanese questionnaire

Country of residence	Frequency	Percent
Germany	2	.3
Italy	1	.2
United States	3	.5
Zambia	2	.3
Japan	624	98.7
Total	632	100.0

Table 3.6. Total variance explained before rotation for English and Japanese language respondents for what aggression means to the owner

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.939	49.660	49.660	8.939	49.660	49.660
2	2.866	15.924	65.584	2.866	15.924	65.584
3	.904	5.025	70.609			
4	.746	4.144	74.753			
5	.565	3.140	77.893			
6	.505	2.806	80.699			
7	.414	2.301	83.000			
8	.410	2.275	85.275			
9	.377	2.097	87.372			
10	.354	1.967	89.339			
11	.302	1.678	91.017			
12	.285	1.584	92.601			
13	.262	1.454	94.055			
14	.248	1.378	95.433			
15	.226	1.254	96.687			
16	.222	1.236	97.923			
17	.221	1.227	99.150			
18	.153	.850	100.000			

Figure 3.1. Scree Plot of English and Japanese language respondents for what aggression means to the owner

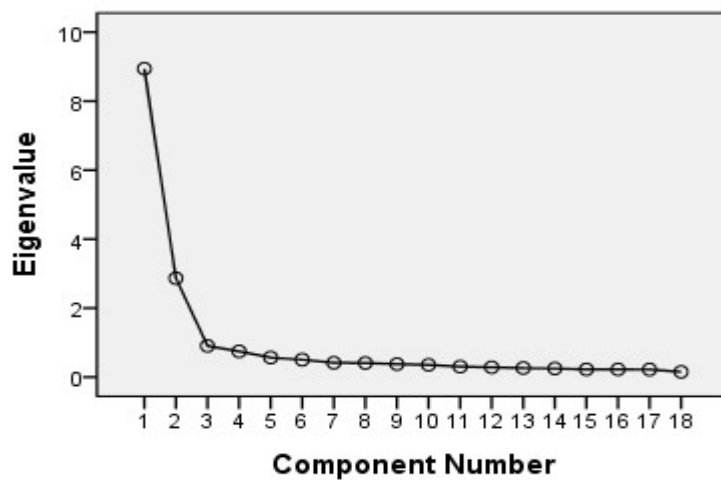


Table 3.7. Total variance explained before rotation for English and Japanese language respondents for Opinion for using physical punishment or verbal correction or taking away privileges for children

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.302	44.185	44.185	5.302	44.185	44.185
2	2.333	19.439	63.624	2.333	19.439	63.624
3	1.265	10.546	74.170	1.265	10.546	74.170
4	.792	6.602	80.772			
5	.431	3.594	84.366			
6	.397	3.309	87.675			
7	.348	2.904	90.579			
8	.333	2.774	93.353			
9	.289	2.410	95.763			
10	.219	1.824	97.587			
11	.153	1.277	98.864			
12	.136	1.136	100.000			

Figure 3.2. Scree Plot of English and Japanese language participants for Opinion for using physical punishment or verbal correction or taking away privileges for children

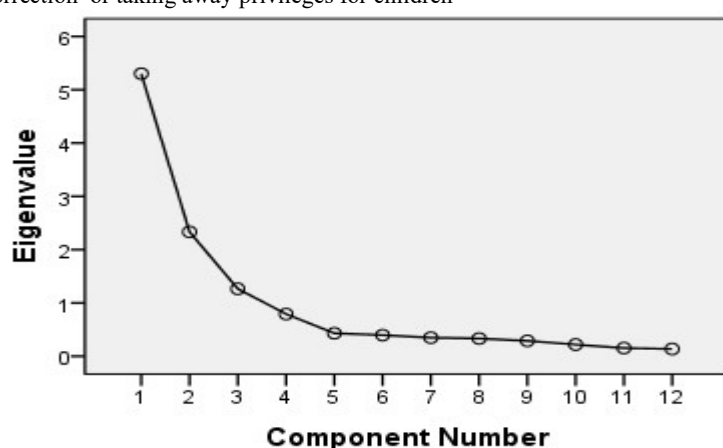


Table 3.8. Total variance explained before rotation for English and Japanese language respondents for Opinion for using physical punishment or verbal correction or taking away privileges for dogs

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.523	46.028	46.028	5.523	46.028	46.028
2	2.226	18.547	64.576	2.226	18.547	64.576
3	1.528	12.731	77.307	1.528	12.731	77.307
4	.617	5.146	82.453			
5	.440	3.667	86.120			
6	.363	3.029	89.148			
7	.299	2.492	91.640			
8	.281	2.345	93.985			
9	.252	2.096	96.081			
10	.172	1.430	97.511			
11	.162	1.349	98.860			
12	.137	1.140	100.000			

Figure 3.3. Scree Plot of English and Japanese language participants for Opinion for using physical punishment or verbal correction or taking away privileges for dogs

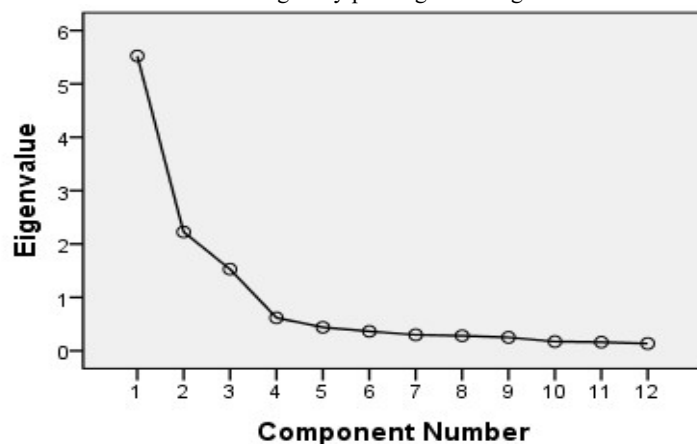


Table 3.9. The distribution of relationship with dogs in English and Japanese language respondents

Relationship with a dog	English LR		Japanese LR	
	Frequency	Percent	Frequency	Percent
My pet	172	15.0	25	4.0
A guard	3	.3	1	.2
A friend	132	11.5	8	1.3
My partner	87	7.6	90	14.2
A non-human family member	603	52.6	308	48.7
An adult member of the family	16	1.4	48	7.6
A baby /child member of the family	71	6.2	137	21.7
Working partnership (i.e. police dog, herding dog)	19	1.7	2	.3
Assistance partnership	12	1.0	0	0
Gundog/sporting dog	6	.5	2	.3
Other	25	2.2	11	1.7
Total	1146	100.0	632	100.0



Table 3.10. The distribution of owner's expectation of dogs in English language respondents

	Relaxation	Companionship	Emotional enrichment	A challenge and responsibility	Provides security and protection	Prestige (something to be proud of)	Facilitates social interaction with others	Helps to teach children responsibility and respect for animals	Leisure activities	Provides assistance	Encourages a healthy, active lifestyle	Other
N	200	827	996	240	121	20	107	96	220	24	547	37
Total scores	496.00	1521.00	1406.00	563.00	307.00	53.00	289.00	245.00	540.00	50.00	1306.00	91.00

Table 3.11. The distribution of owner's expectation of dogs in Japanese language respondents

	Relaxation	Companionship	Emotional enrichment	A challenge and responsibility	Provides security and protection	Prestige (something to be proud of)	Facilitates social interaction with others	Helps to teach children responsibility and respect for animals	Leisure activities	Provides assistance	Encourages a healthy, active lifestyle	Other
N	451	192	555	72	12	1	79	93	128	1	264	33
Total scores	873.00	426.00	813.00	159.00	29.00	3.00	208.00	216.00	317.00	3.00	648.00	67.00

Table 3.12. The distribution of how owners spend time with dogs in English language respondents

	Daily activities with your dog- Grooming	Feeding	Bathing	Dressing my dog up	Visiting friends together	Playing with toys together in the house	Keeping me company when I drive to go shopping / other places	Being close to each other	Taking part in obedience training classes	Taking part in sport activities. e.g. agility, fly ball	Playing with toys together outside/ garden	Sleeping together in bed	Going for a family day trip	Walking my dog in his/her stroller	Going to dog friendly places together i.e. café, dog run, hotel	Walking with my dog	Other
N	81	267	6	3	30	285	49	800	129	177	284	276	33	4	75	799	136
Total scores	206.00	611.00	15.00	7.00	80.00	679.00	123.00	1287.00	302.00	410.00	628.00	550.00	85.00	8.00	186.00	1403.00	290.00

Table 3.13. The distribution of how owners spend time with dogs in English language respondents

	Daily activities with your dog-Grooming	Feeding	Bathing	Dressing my dog up	Visiting friends together	Playing with toys together in the house	Keeping me company when I drive to go shopping / other places	Being close to each other	Taking part in obedience training classes	Taking part in sport activities. e.g. agility, fly ball	Playing with toys together outside/garden	Sleeping together in bed	Going for a family day trip	Walking my dog in his/her stroller	Going to dog friendly places together i.e. café, dog run, hotel	Walking with my dog	Other
N	104	342	15	3	3	140	78	343	18	25	47	218	11	0	27	498	20
Total score	258.00	662.00	41.00	8.00	9.00	319.00	206.00	572.00	44.00	55.00	108.00	427.00	30.00		66.00	937.00	40.00

Table 3.14. The distribution of participation for training classes in English and Japanese language respondents

<b>Nationality</b>		<b>Frequency</b>	<b>Percent</b>
English	Yes	939	<b>81.9</b>
	No	207	18.1
	Total	1146	100.0
Japanese	Yes	305	48.3
	No	327	<b>51.7</b>
	Total	632	100.0

Table 3.15. A distribution of level of handling experience with dogs in English and Japanese language respondents

LR= language respondents

	<b>Level of experience</b>	<b>English LR</b>		<b>Japanese LR</b>	
		<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Items	I am competent to attend to basic issues, i.e. feeding, walking and toileting my dog	12	1.0	63	10.0
	I am competent to train my dog to a basic level of obedience, i.e. sit, down, wait	<b>381</b>	<b>33.2</b>	<b>112</b>	<b>17.7</b>
	I am competent to train my dog to a high level of obedience	<b>301</b>	<b>26.3</b>	<b>82</b>	<b>13.0</b>
	I am competent to take part in local obedience competitions	143	12.5	38	6.0
	I am competent to take part in international competitions	29	2.5	1	.2
	Other	73	6.4	5	.8
	Total	939	81.9	301	47.6
Missing		207	18.1	331	52.4
Total		1146	100.0	632	100.0

Table 3.16. Descriptive of a positive reinforcement or positive punishment of training methods for English language participants

<b>Training method</b>	<b>English LR</b>			<b>Japanese LR</b>		
	N Statistic	Mean Statistic	Std. Deviation Statistic	N Statistic	Mean Statistic	Std. Deviation Statistic
b) Positive reinforcement	1146	<b>1.9084</b>	1.27570	632	<b>.8703</b>	1.14507
b) Positive punishment	1146	<b>.9642</b>	1.06535	632	<b>1.5854</b>	1.09268
Valid N	1146			632		

## Appendix Chapter 4

Table 4.1. 43 Categorical variables coding for a logistic regression analysis

Categorical variables		Frequency	Parameter coding			
			(1)	(2)	(3)	(4)
Age group dog owner	18-29	304	1.000	.000	.000	.000
	30-39	376	.000	1.000	.000	.000
	40-49	467	.000	.000	.000	.000
	50-59	412	.000	.000	1.000	.000
	Over 60	150	.000	.000	.000	1.000
Country live in	Europe	506	.000	.000	.000	
	North America	483	1.000	.000	.000	
	Japan	593	.000	1.000	.000	
	Other	127	.000	.000	1.000	
Current Work Status	Employed	1224	.000	.000	.000	
	No job	306	1.000	.000	.000	
	Student	118	.000	1.000	.000	
	Other	61	.000	.000	1.000	
Relationship	Living with an adult partner in a long term relationship	1037	.000	.000	.000	
	Living without an adult partner	356	1.000	.000	.000	
	Living with parents / guardian	228	.000	1.000	.000	
	Other	88	.000	.000	1.000	
Area you live	Urban (a large town/city)	529	.000	.000	.000	
	Suburban (outskirts of a large town or city)	457	1.000	.000	.000	
	Semi urban (a small town/village )	413	.000	1.000	.000	
	Rural (all those people not included within an urban /semi urban/suburban area)	310	.000	.000	1.000	
Nationality	European	538	.000	.000	.000	
	North American	452	1.000	.000	.000	
	Japanese	601	.000	1.000	.000	
	Other	118	.000	.000	1.000	
Type Home	House	1269	.000	.000		
	Apartment	420	1.000	.000		
	Other	20	.000	1.000		
Ethnic group	Caucasian	986	.000	.000		
	Asian	587	1.000	.000		
	Other	136	.000	1.000		
Children less 12 years old group	None	1529	.000	.000		
	One	118	1.000	.000		
	Over two	62	.000	1.000		
Children over 12 years old group	None	1528	.000	.000		
	One	112	1.000	.000		
	Over two	69	.000	1.000		
HDAB behaviour problem Yes No	No	858	.000			
	Yes	851	1.000			
English and Japanese language participants	Japanese	599	1.000			
	English	1110	.000			
Gender Male or female	Female	1497	1.000			
	Male	212	.000			

Table 4.2. The distribution of frequency for scenario A: An owner is walking with their dog on a lead in a park and an unfamiliar person approaches the dog. The dog growls and snaps at him

Top 1-12	g) The dog is feeling threatened by the person	c) The dog is afraid of the person	k) The dog is frustrated by the limits of the available free space in which to operate	b) The dog does not like the person	d) The dog is challenging the person	a) The dog is feeling pain	i) The dog is frustrated by the prospect of losing something	l) Other	j) The dog is frustrated by the inability to interact with the person	e) The dog is playing with the person	h) The dog is desiring interaction with the person for pleasure	f) The dog displayed the behaviour accidentally
T N(1778) Total number Percentage	<b>1,532</b> <b>86.2%</b>	<b>1,400</b> <b>78.7%</b>	653 36.7%	573 32.2%	280 15.7%	246 13.8%	219 12.3%	137 7.7%	132 7.4%	59 3.3%	57 3.2%	38 2.1%

Table 4.3. The distribution of frequency for scenario B: Dog is in a fenced garden or in a house and sees someone outside (i.e. the postman, or a delivery person). The dog dashes up to the boundary and barks at the person until the person

Top 1-12	g) The dog is feeling threatened by the person	c) The dog is afraid of the person	d) The dog is challenging the person	j) The dog is frustrated by the inability to interact with the person	l) Other	b) The dog does not like the person	k) The dog is frustrated by the limits of the available free space in which to operate	i) The dog is frustrated by the prospect of losing something	h) The dog is desiring interaction with the person for pleasure	e) The dog is playing with the person	f) The dog displayed the behaviour accidentally	a) The dog is feeling pain
N(1778) Total number Percentage.	<b>1,321</b> <b>74.3%</b>	845 47.5%	726 40.8%	522 29.4%	456 25.6%	435 24.5%	384 21.6%	349 19.6%	164 9.2%	61 3.4%	44 2.5%	23 1.3%

Table 4.4. The distribution of frequency for scenario C: An owner is using a toy to play a game of “tug of war” with his/her pet dog. The dog starts to growl and it bites the owner’s hand when the owner tries to pull the toy away

Top 1-12	i) The dog is frustrated by the prospect of losing something	d) The dog is challenging the person	f) The dog displayed the behaviour accidentally	e) The dog is playing with the person	g) The dog is feeling threatened by the person	l) Other	h) The dog is desiring interaction with the person for pleasure	j) The dog is frustrated by the inability to interact with the person	k) The dog is frustrated by the limits of the available free space in which to operate	a) The dog is feeling pain	b) The dog does not like the person	c) The dog is afraid of the person
N(1778) Total Number percentage	<b>1,305</b> <b>73.4%</b>	836 47.0%	683 38.4%	664 37.3%	425 23.9%	357 20.1%	253 14.2%	223 28.7%	209 11.8%	132 7.4%	125 7.0%	118 6.6%

Table 4.5. The distribution of frequency for scenario C: English language respondents for perception towards cause of HDAB

Top 1-12	1.The dog is feeling pain	2.The dog is afraid of the person	3.The dog is challenging the person	4.The dog is playing with the person	5.The dog is feeling threatened by the person	6.The dog is frustrated by the prospect of losing something	7.The dog is frustrated by the inability to interact with the person	8.The dog is frustrated by the limits of the available free space in which to operate	9.The dog does not like the person	10.The dog displayed the behaviour accidentally	11.The dog is desiring interaction with the person for pleasure	12.Other
N (1146)												
Mean	.0410	.0271	.3935	<b>.5209</b>	.1876	<b>.8010</b>	.0916	.0393	.0140	<b>.5454</b>	.1545	.1806
Sum	47.00	31.00	451.00	597.00	215.00	918.00	105.00	45.00	16.00	625.00	177.00	207.00

Table 4.6. The distribution of frequency for scenario C: Japanese respondents for perception towards cause of HDAB

Top 1-12	1.The dog is feeling pain	2.The dog is afraid of the person	3.The dog is challenging the person	4.The dog is playing with the person	5.The dog is feeling threatened by the person	6.The dog is frustrated by the prospect of losing something	7.The dog is frustrated by the inability to interact with the person	8.The dog is frustrated by the limits of the available free space in which to operate	9.The dog does not like the person	10.The dog displayed the behaviour accidentally	11.The dog is desiring interaction with the person for pleasure	12.Other
N (636)												
Mean	.1345	.1377	<b>.6092</b>	<b>.1060</b>	<b>.3323</b>	<b>.6123</b>	.1867	.2595	.1725	.0918	.1203	.2373
Sum	85.00	87.00	385.00	67.00	210.00	387.00	118.00	164.00	109.00	58.00	76.00	150.00

Table 4.7. The distribution of frequencies for participants total binary score for top 3 of the important elements of the prevention of HDAB

<b>Top 3 choices</b>	<b>Frequency</b>	<b>Percent</b>
1.00	36	2.0
2.00	881	49.6
3.00	861	48.4
Total	1778	100.0

Table 4.8. The distribution of frequencies for participants total binary score for top 3 of the priority methods for the modification of HDAB

<b>Top 3 choices</b>	<b>Frequency</b>	<b>Percent</b>
.00	56	3.1
1.00	304	17.1
2.00	689	38.8
3.00	729	41.0
Total	1778	100.0

## Appendix Chapter 5

Table 1: The instruction and questionnaire for online video assessment

### Online video assessment: Introduction

Thank you very much for agreeing to take part in this study.

The study asks you about your opinion of the behaviour of the dog in a series of videos.

The study is in 3 Stages:

1. Review and comment on 10 short videos (30 sec- 1 minute each) which illustrate common scenarios involving dog behaviour around people using a simple questionnaire on each.
  2. About 2 weeks after receiving your responses, we will send you an online resource about the assessment of aggressive behaviour in dogs for you to review.
  3. About 2 weeks after the online resource has been sent, we will ask you to review another series of 10 videos as before.

You will be asked to review the online resource again prior to completion of this second exercise.

We anticipate it will take approximately 30 to 40 minutes to complete the tasks in stages 1 and 2.

All information you provide will be considered confidential, and you will not be individually identifiable in any publication of the work.

In order to progress through this survey, please use the following instructions:

- Click » button on the right hand side to continue to the next page.
- Click « to return to the previous page.
- Any questions marked with an asterisk (\*) requires an answer in order to progress further through the survey.
- If you need to interrupt the survey, your answers will be automatically saved and you may resume it later as long as you use the same computer and have not clicked on any button, but we would appreciate it if you could try to do it in a single sitting.

If you have any questions about the survey, please contact us at  
09155533@students.lincoln.ac.uk



## **Dog owners**

### **Part 1: Demographic information**

#### **Your details**

Q 1. Your name: \_\_\_\_\_

Q 2. Your e-mail address \_\_\_\_\_

Q 3. Age: \_\_\_\_\_ (years)

Q 4. Gender:  Male  Female

Q 5. Nationality: \_\_\_\_\_

Q 6. Occupation: \_\_\_\_\_

#### **Your experience**

Q7. Do you own a dog at present?

Yes

No

Q 8. How many dogs do you currently own?

Please indicate the number e.g. 2

Q 9. For how long have you owned dogs? Please indicate the numbers of years or months. e.g. 15 years or 6 months

Q 10. How long have you worked with dogs? Please indicate the numbers of years or months. e.g. 5 years or months. If you have been working or have worked with dogs as a volunteer, please also indicates the number of years or months.

If you have not worked with dogs, please indicate "None"

**Q 11. Which is the following your highest level of science qualification? Please select one that applies:**

- Further education / qualifications. e.g. A levels, GCSEs, National diploma
- First degree / high education. e.g. BSc, foundation degrees
- First level postgraduate qualifications. e.g. MSc, DVM
- Research degree .e.g. PhD
- Other \_\_\_\_\_
- None

**Q 12. If you belong to any organisations as a trainer and /or as a behaviourist, please list below.**

**Q 13. What kind of training classes have you either taught or participated in? Please select one of the following:**

- a) Puppy socialisation class
  - Attended  Taught  Both
- b) Basic obedience class
  - Attended  Taught  Both
- c) Intermediate obedience class/ advanced obedience class, i.e. recognised qualification such as the kennel club good citizen scheme or equivalent
  - Attended  Taught  Both
- d) Agility class
  - Attended  Taught  Both
- e) Dog dance class
  - Attended  Taught  Both
- f) Sports class e.g. fly ball, Frisbee
  - Attended  Taught  Both
- g) One to one obedience tuition / private lesson
  - Attended  Taught  Both
- h) Other \_\_\_\_\_
- None of above

**Q 14. Have you had experience of your dog / dogs exhibiting growling, snarling, snapping or biting behaviour towards an adult /child?**

- Yes  No

**Q 15. On which of the following do you research or seek information from, when you wish to have information for dog training or behavioural problems? Please select all options that apply:**

- TV
- Book
- Magazine
- Newspaper
- Internet
- Pet shop
- Breeder
- Friends
- Other \_\_\_\_\_
- None

**Q 16. If there are particular TV programmes, magazines, Internet sites, you use for information, please indicate the name below:**

**Your opinion on training methods**

**Q 17. Please tick one that indicates how strongly you agree or disagree with the following statements about managing behavioural problems:**

**SD=Strongly Disagree, DA=Disagree, PD=Partly Disagree, A =Agree, PA=Partly Agree, SA=Strongly Agree**

	<b>SD</b>	<b>DA</b>	<b>PD</b>	<b>A</b>	<b>PA</b>	<b>SA</b>
I believe that reward based methods are the best way to manage behaviour problems						
I believe that sometimes it is necessary to use physical methods (e.g. pushing down, smacking, holding muzzle) to manage behavioural problems						
I believe that it is best to focus on using physical methods (e.g. pushing down, smacking, holding muzzle) to manage behavioural problems						
I believe that it depends on the behaviour problem whether the choice of using reward or punishment based methods is used						
I believe that a combination of reward and punishment based methods is the best way to manage behaviour problems						

## Video assessment: Questions

In this video, we are focusing on what the dog is doing in response to a given situation.

### 1. Do you consider this an aggressive response?

- Yes       No

### 2. This question involves two technical terms defined below:

- An incentive is something that the animal wants e.g. a reward (food, companionship, relief from noise or pain).
- An aversive is something that the animal wants to avoid, e.g. a punishment, noise, pain, the loss of things which are valued.

### Q. Which of the following do you think is triggering the animal's response?

Please select **one** that applies from the following answers:

- Presence of an aversive stimulus  
 Anticipation of aversive stimulus  
 Removal of aversive stimulus  
 Presence of an incentive stimulus  
 Anticipation of an incentive stimulus  
 Removal of an incentive stimulus  
 Other stimulus (specify) – please give details

- 
- Not sure

Listed below are circumstances that can explain what is happening.

These are grouped under 8 subheadings

### Q 3. Please tick the one circumstance from the following 8 subheading that best explains the reason why the animal is behaving in the way you see in the video:

#### Response to a resource that the dog wants (desirables)

- a)  Predation  
b)  Object play  
c)  Looking for / Seeking out desirable items  
d)  Other positive action towards something the dog desires - please give details  
tails \_\_\_\_\_

#### Response to the denial or absence of things that the dog wants (frustrations)

- a)  Denied access to reward  
b)  Restrained by barrier  
c)  Touched by someone

- d)  Removal of an object that the dog likes
- c)  Other frustration– please give details \_\_\_\_\_

**Response to things that might harm the dog (threats)**

- a)  Unexpected event
  - b)  Threat from owner / other animal
  - c)  Other threat
- please give details \_\_\_\_\_

**Response to bodily harm (hurts)**

- a)  The dog is physically harmed by it's owner / other individual
- b)  The dog may have a physical problem that is hurting it
- c)  Other hurt - please give details \_\_\_\_\_

**Social play or similar positive interaction with an affiliate (affiliate)**

- a)  The dog is engaging actively in reciprocal play with a social partner
  - b)  Other type of reciprocated social interaction
- please give details \_\_\_\_\_

**Response to loss of source of security and safety (attachment figures and objects)**

- a)  The dog feels insecure due to the absence of an attachment figure or object
  - b)  Other type of response to loss of attachment figure or object
- please give details \_\_\_\_\_

**Parental-type activity, directed towards caring for a dependent (dependents)**

- a)  Threat to offspring or dependents
  - b)  Other form of parental type activity
- please give details \_\_\_\_\_

**Avoidance or exclusion of an individual who does not provide benefits of the dog (undesirables)**

- a)  Exclusion of an unfamiliar individual who provides no obvious benefit
- b)  Exclusion of an individual whom the dog has learned is associated with loss of resources
- c)  Other form of exclusion activity directed towards an individual the dog does not wish to associate with – please give details \_\_\_\_\_

**Q 4. Do you think the dog increases or decreases its arousal in response to the trigger?**

**For each bodily sign, please select one option that reflects your opinion:**

**\*If you think that there is no other bodily sign, please tick "Not visible" for the last item.**

	Large increase	Some increase	No change	Some decrease	Large decrease	Not sure	Not visible
Panting							
Trembling							
Change in muscle / body tension							
Hair hackle							
Pupil dilation							
Other bodily signs _____							

**This question is in two parts and involves another technical term in part b:**

**Displacement behaviour** – a behaviour which is shown by an individual in conflict situations which seems completely irrelevant to solving the problem

**Please answer the following questions in relation to the attention and movement of the dog in response to the trigger.**

**Q5. What action do you think is being made in response to the trigger?**

Attention to the object (select one only)

- Focusing attention towards the object to seek contact
- Focusing attention towards the object to keep away from it
- Looking away from the object to avoid contact
- Monitoring what the object is doing
- Other attention – please give details \_\_\_\_\_
- Not sure
- Not attending to the trigger

b) Movement to the object (select one or as many as apply)

- Moving towards the object to seek contact
- Moving towards the object to move it away
- Moving body away from the object to withdraw from the situation
- Turning head away from the object to withdraw from the situation
- Stopping movement to monitor the object in order to be ready to react
- Staying to protect another from the object
- Snapping / biting another object nearby to seek contact

- Keeping physical contact with the object
- Showing displacement behaviour. e.g. sniffing ground, paw lifting, body shaking, scratching, circling
- Other movements – please give details \_\_\_\_\_
- Not sure
- None of above

**6. In this question, we ask you to consider 8 potential regions of the body used for signalling. For each of these, please tick the signalling changes that you think is a direct consequence of the trigger, AND which are a sign that the dog is trying to communicate its internal state to another:**

**\*In the videos, please identify the behavioural signals which you recognise. If you cannot definitively identify a behavioural signal, please choose "not sure" or if you consider that a particular behavioural signal is not displayed in the video please choose "not visible".**

a) Facial expression

Eyes

Please select all that apply:

- Squinting of eyes
- Wide open eyes
- Narrow eyes
- Wide eyes with tension surrounding musculature
- Not sure
- Staring /fixed gaze
- Closed eyes
- Not visible
- Looking away
- White around the eyes
- Other facial expressions - please give details \_\_\_\_\_

Ears

- Ears pricked and forward
- Ears to the side
- Held in tension
- Fold ears back
- Relaxed ears
- Not sure
- Other facial expressions - please give details \_\_\_\_\_

Mouth / muzzle

- Open mouth / lip corner pull

- Relaxed lips
- Closed mouth with tense expression
- Lip drawn way back
- Teeth exposed with wrinkled muzzle skin
- Not sure
- Not visible
- Other facial expressions - please give details \_\_\_\_\_

**b) Head position**

Please select one that applies:

- Head turned to the side
- Head down / lowered head
- Head raised more than normal
- Neutral
- Not sure
- Other head positions – please give details \_\_\_\_\_

**c) Body position**

Please select one that applies:

- Weight shifted forward
- Weight shifted back
- Not sure
- Not visible
- Other body positions – please give details \_\_\_\_\_

**d) Body orientation**

Please select one that applies:

- Body forward
- Body turned to the side
- Stillness
- Lowered body
- Arched back
- Not sure
- Not visible
- Other body positions – please give details \_\_\_\_\_

**e) Tail position**

Please select one that applies:

- Tail up and stiff



- Tail raised horizontal
- Lowered tail
- Tail tucked between legs
- Tail changing position
- Neutral
- Not sure
- Not visible
- Other tail positions – please give details \_\_\_\_\_

f) Tail movement

Please select one that applies:

- Tail still
- Tail slowly wagging
- Tail quickly wagging
- Not sure
- Not visible
- Other tail movements – please give details \_\_\_\_\_

g) Displacement behaviour

Please select all that apply:

- Circling
- Sniffing ground
- Paw lifting
- Body shaking
- Scratching
- Play bowing
- Stretching
- Blinking
- Yawning
- Sneezing
- Lip licking/ tongue flick
- Bouncing (forward, backwards)
- Not sure
- Not visible
- Other displacement behaviour – please give details \_\_\_\_\_

h) Vocalization

Please select all that apply:

- Growling
- Barking
- Yapping
- Whining
- Howling
- Snarling
- Screaming
- Not sure
- Not audible
- Other vocalizations – please give details \_\_\_\_\_

**7. What emotion do you think the dog is showing?**

Table 5.2. The content summary of 20 videos

<b>Video set A and B</b>	<b>Content</b>
<b>Video A1: Dog &amp; TV reporter</b>	A dog is frustrated without personal space by TV reporter's sudden approach
<b>Video A2: Corgi on box</b>	Corgi which is sitting on a box is frustrated by his owner touching him
<b>Video A3: Chihuahua</b>	Chihuahua was feeling frustration and also fear at anticipated loss of a resource (food).
<b>Video A4: Toy poodle</b>	Toy poodle is expecting a postman to deliver the post but frustrated with the barrier (front door).
<b>Video A5: Border collie</b>	Border collie is wanting to chase passing cars but is frustrated with being held on the lead.
<b>Video A6: Boxer and owner</b>	Boxer is highly excited and enjoying playing with his owner's leg.
<b>Video A7: Rottweiler</b>	Rottweiler is obeying owner's command to show growing and expecting a reward
<b>Video A8: Dog grooming</b>	The dog which is held on the grooming table is feeling pain from the nail cutter.
<b>Video A9: Dog walking</b>	The dog which is walking with his owner on a street comes across a dog. It is frustrated with being held on the lead and cannot access the dog.
<b>Video A10: GSD</b>	German shepherd is protecting his offspring and also feels frustration with the person who is taking a video and approaching.
<b>Video B1: Dog on entrance</b>	A dog is fearful of a person is coming in the house and is frustrated without personal space.
<b>Video B2: Pekinese on bed</b>	Pekinese is demanding play with his owner and is also frustrated with the way of his owner's play.
<b>Video B3: Dog is eating a bone</b>	Toy poodle is eating a bone and his owner approaches to take it away. The dog bit it's owner.
<b>Video B4: Dog and postman</b>	A dog is highly aroused with the postman approaching and is frustrated with the front door.
<b>Video B5: Dog chase a bike</b>	Dogs in front of the house are enjoying chasing bikes.
<b>Video B6: Pug and owner</b>	Pug on owner's bed is expecting play with his owner and tempting him.
<b>Video B7: Shiba inu on bed</b>	Shiba inu is obeying the owner's command to show growing.
<b>Video B8: Papillion</b>	Papillion on a table of a veterinary practice feels pain from the vet's treatment and is screaming.
<b>Video B9: Dog on sofa</b>	A dog is fearful of the person who is approaching and then is frustrated with the space being entered.
<b>Video10: Pomeranian</b>	Pomeranian is protecting her offspring from it's owner who is trying to touch them.

Table 5.3. Q. 7 Dog's emotion for vide set A and B for agreement between experts

<b>Video set A and B</b>	<b>Pro Daniel Mills</b>	<b>Experts</b>
<b>Video A1: Dog &amp; TV reporter</b>	Frustration in response to invasion of close personal space	Frustration for the space
<b>Video A2: Corgi on box</b>	Frustration	Frustration
<b>Video A3: Chihuahua</b>	Frustration at anticipated loss of a resource, but also element of fear	Frustration and fear
<b>Video A4: Toy poodle</b>	Seeking and frustration	Seeking and frustration
<b>Video A5: Border collie</b>	Seeking and frustration	Seeking and frustration
<b>Video A6: Boxer and owner</b>	Seeking, object play	Seeking, object play
<b>Video A7: Rottweiler</b>	Seeking a reward	Seeking a reward
<b>Video A8: Dog grooming</b>	Fear of pain	Fear of pain
<b>Video A9: Dog walking</b>	Frustration	Frustration
<b>Video A10: GSD</b>	Care and frustration	Care and frustration
<b>Video B1: Dog on entrance</b>	Frustration and fear	Frustration and fear
<b>Video B2: Pekinese on bed</b>	Seeking play and degree of frustration	Seeking play
<b>Video B3: Dog is eating a bone</b>	Frustration	Frustration
<b>Video B4: Dog and postman</b>	Frustration	Frustration
<b>Video B5: Dog chase a bike</b>	Seeking	Seeking behaviour
<b>Video B6: Pug and owner</b>	Social play	Social play
<b>Video B7: Shiba inu on bed</b>	Learned behaviour	Learned behaviour
<b>Video B8: Papillion</b>	Pain	Pain
<b>Video B9: Dog on sofa</b>	Fear possibly turning to rage as space being entered	Fear and frustration for a space
<b>Video10: Pomeranian</b>	Care protection	Care protection

Table 5.4: A distribution of used ten categories

Categories		Value Label	N
Non-intervention or Intervention	.00	Non intervention	78
	1.00	Intervention	83
English and Japanese language respondents	.00	English	72
	1.00	Japanese	89
Nationality	1.00	European	35
	2.00	North American	29
	3.00	Japanese	89
	4.00	Other	8
Age groups	1.00	18-29	16
	2.00	30-39	27
	3.00	40-49	47
	4.00	50-59	49
	5.00	Over 60	22
Gender	1	Male	18
	2	Female	143
Number of dogs	.00	None	3
	1.00	One	65
	2.00	Two	57
	3.00	Three	20
	4.00	More than four	16
Baseline A or B video groups	.00	Baseline A group	81
	1.00	Baseline B group	80
Professional or not professional	.00	non-professional	110
	1.00	Professional	51
How long own dogs	1.00	Less 5	20
	2.00	6-10 years	28
	3.00	11-20 years	46
	4.00	21-30 years	35
	5.00	Over 31 years	32
Period of working with dogs including volunteer works	1.00	None	57
	2.00	Less 5	33
	3.00	6-20 years	57
	4.00	Over 21 years	14

\* Professional - the participants who do work with dogs as a profession for over 5 years, e.g. vet, veterinary nurse, dog trainer, behaviorist, trimmer

Non-professional – the participants who do not work with dogs as a profession

Table 5.5. The total scores of the English and Japanese language participants intervention and non-intervention group for dog's emotion

Group	N	Baseline		Final		Asymp. Sig. (2-tailed)
		Mean Score	Std	Mean Score	Std	
<b>English</b>						
Intervention	38	<b>1.8158</b>	1.08691	<b>3.1316</b>	1.56259	0.001
Non-intervention	34	<b>2.1176</b>	1.17460	<b>2.7056</b>	1.11544	0.081
<b>Japanese</b>						
Intervention	45	<b>1.4889</b>	1.03621	<b>2.6000</b>	1.21356	0.001
Non-intervention	44	<b>1.3182</b>	0.85651	<b>2.3636</b>	1.08029	0.001

Table 5.6. Mean on a total score of Nationality for using ANCOVA for analysis of participants' rating of dog's emotion

Nationality	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
European	2.567 <sup>a</sup>	.213	2.146	2.988
North American	3.246 <sup>a</sup>	.233	2.786	3.707
Japanese	2.507 <sup>a</sup>	.134	2.242	2.771
Other	3.116 <sup>a</sup>	.440	2.246	3.985

Table 5.7. The total scores of the English and Japanese language participants intervention and non-intervention group for triggers of the dog's response

Group	N	Baseline		Final		Asymp. Sig. (2-tailed)
		Mean Score	Std	Mean Score	Std	
<b>English</b>						
Intervention	38	<b>3.6842</b>	1.33771	<b>4.2105</b>	1.43617	0.75
Non-intervention	34	<b>4.2059</b>	1.55270	<b>4.4412</b>	1.54118	0.305
<b>Japanese</b>						
Intervention	45	<b>3.1778</b>	1.40274	<b>3.6444</b>	1.38425	0.077
Non-intervention	44	<b>2.8864</b>	1.24295	<b>3.6136</b>	1.58798	0.015

Table 5.8. Mean on a total score of Professional or not professional groups with both English / Japanese language respondents and Nationality using ANCOVA for triggers of the dog's response

Professional or not professional	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Professional	4.413 <sup>a</sup>	.198	4.021	4.804
non-professional	3.720 <sup>a</sup>	.134	3.455	3.986

Table 5.9. Mean on a total score of Baseline A or B video groups with both English and Japanese language respondents and Nationality using ANCOVA for triggers of the dog's response

Baseline A or B video groups	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Baseline A group	3.798 <sup>a</sup>	.169	3.465	4.131
Baseline B group	4.335 <sup>a</sup>	.161	4.018	4.652

Table 5.90. The total scores of the English and Japanese language participants intervention and non-intervention group for emotionally competent stimulus

Group	N	Baseline		Final		Asymp. Sig. (2-tailed)
		Mean Score	Std	Mean Score	Std	
<b>English</b>						
Intervention	38	<b>1.7368</b>	1.13147	<b>2.7895</b>	1.61342	0.01
Non-intervention	34	<b>1.9706</b>	1.29065	<b>2.7647</b>	1.32708	0.08
<b>Japanese</b>						
Intervention	45	<b>1.9333</b>	0.86340	<b>2.1778</b>	0.83364	0.208
Non-intervention	44	<b>1.7045</b>	1.06922	<b>1.7727</b>	0.74283	0.665

Table 5.11. Mean on a total score of Baseline A or B video groups with Nationality using ANCOVA for emotionally competent stimulus

Nationality	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
European	2.794 <sup>a</sup>	.189	2.421	3.168
North American	2.715 <sup>a</sup>	.208	2.304	3.125
Japanese	1.962 <sup>a</sup>	.118	1.728	2.196
Other	3.070 <sup>a</sup>	.395	2.289	3.852

Table 5.12. Mean on a total score of Baseline A or B video groups with Nationality using ANCOVA for emotionally competent stimulus

Baseline A or B video groups	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Baseline A group	2.930 <sup>a</sup>	.165	2.605	3.255
Baseline B group	2.340 <sup>a</sup>	.156	2.032	2.648

## 7. References

A DOG'S LIFE, JAPAN. (2014). Retrieved from <https://www.tofugu.com/japan/dog-owner-ship-in-japan/>

APBC (Association of Pet Behaviour Counsellors).(2019). Retrieved from <https://www.apbc.org.uk/the-apbc/>

Aaker, J. L., Benet-Martinez, V., & Garolera, J. (2001). Consumption symbols as carriers of culture: A study of Japanese and Spanish brand personality constructs. *Journal of personality and social psychology*, 81(3), 492.

Ackerman, P. L. (1996). A theory of adult intellectual development: Process, personality, interests, and knowledge. *Intelligence*, 22(2), 227-257.

Ajzen, I. (1991). The Theory of Planned Behaviour, *Original Behaviour and Human Decision Processes*, 50, 179-211.

Albuquerque, N., Guo, K., Wilkinson, A., Savalli, C., Otta, E., & Mills, D. (2016). Dogs recognize dog and human emotions. *Biology letters*, 12(1), 20150883.

Allport, F. H. (1955). Theories of perception and the concept of structure: A review and critical analysis with an introduction to a dynamic-structural theory of behavior. Aloff, B. (2018). *Canine body language: a photographic guide*.

Aloff, B. (2018). *Canine body language: a photographic guide*. Dogwise Publishing.

Amazon Japan. (2017). Retrieved from <http://www.japanesestudies.org.uk/discussionpapers/Assmann.html>

Amazon Japan. (2017). [https://www.amazon.co.jp/s/ref=nb\\_sb\\_noss\\_2?\\_\\_mk\\_ja\\_JP=カタカナ&url=search-alias%3Dstripbooks&field-keywords=犬](https://www.amazon.co.jp/s/ref=nb_sb_noss_2?__mk_ja_JP=カタカナ&url=search-alias%3Dstripbooks&field-keywords=犬)

Amazon UK. (2017). Retrieved from [https://www.amazon.co.uk/s/ref=nb\\_sb\\_noss\\_1?url=search-alias%3Dstripbooks&field-keywords=dogs](https://www.amazon.co.uk/s/ref=nb_sb_noss_1?url=search-alias%3Dstripbooks&field-keywords=dogs)



anicom. (2012). Retrieved from

[http://www.anicomsumpo.co.jp/company/news/news\\_0120802.html](http://www.anicomsumpo.co.jp/company/news/news_0120802.html)

Animal Behaviour Resources Institute. (2008). Retrieved from

<http://abrionline.org/article.php?id=225>

Appleby, et al. (2001). *Vet Rec* 150 (14): 434-8.

Appleby, D. L., Bradshaw, J. W., & Casey, R. A. (2002). Relationship between aggressive and avoidance behaviour by dogs and their experience in the first six months of life. *Veterinary Record*, 150(14), 434-438.

Arata, S., Takeuchi, Y., Inoue, M. and Mori, Y.(2014). " Reactivity to Stimuli" Is a Temperamental Factor Contributing to Canine Aggression. *PloS one*, 9(6), p.e100767.

Arhant, C., Bubna-Littitz, H., Bartels, A., Futschik, A., & Troxler, J. (2010). Behaviour of smaller and larger dogs: effects of training methods, inconsistency of owner behaviour and level of engagement in activities with the dog. *Applied Animal Behaviour Science*, 123(3-4), 131-142.

Assumann, S. (2003). Japanese Women's Magazines Inspiration and Commodity, *ejejs*,

BBC News. (2009). Retrieved from [http://news.bbc.co.uk/2/hi/uk\\_news/england/london/8060461.stm](http://news.bbc.co.uk/2/hi/uk_news/england/london/8060461.stm)

BBC News. (2017). Retrieved from <https://www.bbc.com/news/uk-40683116>

Bahlig-Pieren, Z., & Turner, D. C. (1999). Anthropomorphic interpretations and ethological descriptions of dog and cat behavior by lay people. *Anthrozoös*, 12(4), 205-210.

Ball-Rokeach, S.J., DeFleur, M.L. (1976). "A dependency model of mass-media effects". *Communication Research* 3 (1): 3-21.

Bamberger, M., & Houpt, K. A. (2006). Signalment factors, comorbidity, and trends in behaviour diagnoses in dogs: 1,644 cases (1991–2001). *Journal of the American Veterinary Medical Association*, 229(10), 1591-1601.

Bandura, A. (1973). *Aggression: A social learning analysis*. Prentice-Hall.

- Barbieri, M., Gandolfo, A., Bracchi, P.G. (2007). Behavioural profile of the aggressive dog: a review. *Ann Fac Medic* 27, 73-82
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, 51(6), 1173.
- Barrett, L. F. (2006). Are emotions natural kinds?. *Perspectives on psychological science*, 1(1), 28-58.
- Barrett L. F., Mesquita B., Ochsner K. N., Gross J. J. (2007). The experience of emotion. *Ann. Rev. Psychol.* 58, 373–403.
- Bartels, L. M. (1993). Messages received: The political impact of media exposure. *American Political Science Review*, 87(2), 267-285.
- Beaver, B.V. (1983). Clinical classification of canine aggression. *Applied animal ethology*, 10(1-2), 35-43.
- Beerda, B., Schilder, M. B., van Hooff, J. A., & de Vries, H. W. (1997). Manifestations of chronic and acute stress in dogs. *Applied Animal Behaviour Science*, 52(3-4), 307-319.
- Benedict, R. (2005). *The chrysanthemum and the sword: Patterns of Japanese culture*. Houghton Mifflin Harcourt.
- Benjamin, B. H., & Argyle, M. (1997). The psychology of religious behaviour, belief and experience. *London. Routledge*, 11, 54-1109.
- Bennett, P.C., Cooper, N., Rohlf, V.I., Mornement, K. (2007). Factors influencing owner satisfaction with companion-Dog-Training Facilities. *Journal of Applied Animal Welfare Science* 10, 217–241.
- Berglar, R. (1986). Keeping pets from the psychological viewpoint, *Zentralbl Bakteriol Mikrobiol Hyg B*. 1986 Dec; 183(2-3):304-25.
- Berkowitz, L. (1988). Frustrations, Appraisals, and Aversively Stimulated Aggression, *Aggressive Behaviour* 14, 3-11

Berscheid, E., & Walster, E. H. (1978). *Interpersonal attraction* (2nd ed.). Reading, MA: Addison-Wesley.

Bhanganada, K., Wilde, H., Sakolsataydorn, P., Oonsombat, P. (1993). Dog-bite injuries at a Bangkok teaching hospital. *Acta Tropica* 55, 249-255.

Bian, H. (2012). SPSS discriminant function analysis.

Blackwell, E. J., & Casey, R. A. (2006). The use of shock collars and their impact on the welfare of dogs: A review of the current literature. *Report to the RSPCA*.

Blackwell, E. J, Twells, C, Seawright, A, Casey, R. (2008). The relationship between training methods and the occurrence of behaviour problems in a population of Domestic dogs. *The 6<sup>th</sup> International Veterinary Behaviour Meeting*. 68.

Bodart-Bailey, B. M. (2006). *The dog shogun: the personality and policies of Tokugawa Tsunayoshi*. University of Hawaii Press.

Boissy, A., Manteuffel, G., Jensen, M. B., Moe, R. O., Spruijt, B., Keeling, L. J. & Bakken, M. (2007). Assessment of positive emotions in animals to improve their welfare. *Physiology & Behavior*, 92(3), 375-397.

Bontempo, R., & Rivero, J. C. (1992). Cultural variation in cognition: The role of self-concept in the attitude behaviour link. Paper presented at the meetings of the American Management Association, Las Vegas, Nevada

Bornstein, R., F. (1989). Exposure and affect: overview and meta-analysis of research, 1968-1987: 265.

Bornstein, R. F., & D'agostino, P. R. (1992). Stimulus recognition and the mere exposure effect. *Journal of personality and social psychology*, 63(4), 545.

Bradshaw, J. S. (1991). Sensory and experiential factors in the design of foods for domestic dogs and cats. *Proceedings of the Nutrition Society*, 50(1), 99-106.

- Bradshaw, J.W.S., Nott, H.M.R. (1995). Social and communication behaviour. In: *The Domestic Dog: Its evolution, Behaviour and Interactions with People*, ed. J Serpell, 115-130. Cambridge University Press, Cambridge
- Bradshaw, J. W., Blackwell, E. J., & Casey, R. A. (2009). Dominance in domestic dogs—useful construct or bad habit?. *Journal of veterinary behavior*, 4(3), 135-144.
- Bradshaw, J.W.S., Blackwell, E.J., Casey, R. A. (2009). Dominance in domestic dogs – useful construct or bad habit? *Journal Veterinary Behaviour. Science*. 4, 135-144.
- Brelsford, V., Meints, K., Gee, N., & Pfeffer, K. (2017). Animal-Assisted Interventions in the Classroom—a systematic review. *International journal of environmental research and public health*, 14(7), 669.
- Browne, C. M., Starkey, N. J., Foster, T. M., & McEwan, J. S. (2017). Examination of the Accuracy and Applicability of Information in Popular Books on Dog Training. *Brill*.
- Bruner, J. S., & Minturn, A. L. (1955) ‘Perceptual identification and perceptual organization,’ *Journal of General Psychology*, 21-28.
- Bulter SH, Harvey M (2006) Perceptual biases in chimeric face processing: eye-movement 8 patterns cannot explain it all. *Brain Res* 1124:96-99
- Buss, A. H. (1962). The psychology of aggression: 180-181.
- Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of personality and social psychology*, 63(3), 452.
- Butcher, R., Keuster, T. D. (2008). Aggressive Dogs: A 21<sup>st</sup> Century Problems?, 2009 WSAVA Congress.
- Butler S, Gilchrist ID, Burt DM, Perrett DI, Jones E, Harvey M (2005) Are the perceptual 4 biases found in chimeric face processing reflected in eye-movement patterns? *5 Neuropsychologia* 43:52-59
- CDC (Centers for Disease Control and Prevention). (2018). Retrieved from <https://www.cdc.gov/features/dog-bite-prevention/>

- Cameron, D. B. (1997). Canine dominance-associated aggression: concepts, incidence, and treatment in a private behavior practice. *Applied Animal Behaviour Science*, 52(3-4), 265-274.
- Campbell, E.J., 2016. Owners' abilities to recognise and comprehend signs or displays of aggression in their canine companions out with the home environment. *Veterinary Nursing Journal*, 31(11), 329-333.
- Carver, C. S. (2001). Affect and the functional bases of behavior: On the dimensional structure of affective experience. *Personality and Social Psychology Review*, 5(4), 345-356.
- Casey, R. A., Loftus, B., Bolster, C., Richards, G. J., & Blackwell, E. J. (2013). Inter-dog aggression in a UK owner survey: prevalence, co-occurrence in different contexts and risk factors. *Veterinary Record*, 172(127), 10-1136.
- Caudill, W. A., & Schooler, C. (1973). Child behavior and child rearing in Japan and the United States: an interim report. *Journal of Nervous and Mental Disease*.
- Chang, I. J., Pettit, R. W., & Katsurada, E. (2006). Where and when to spank: A comparison between US and Japanese college students. *Journal of family Violence*, 21(4), 281-286.
- Cheung-Blunden, V. (2011). When East Meets West: Understanding the Misconduct of Teenage Girls in Hong Kong. *The Open Psychology Journal*, 4(1).
- Cho, C. H., & Cheon, H. J. (2005). Cross-cultural comparisons of interactivity on corporate web sites: the United States, the United Kingdom, Japan, and South Korea. *Journal of advertising*, 34(2), 99-115.
- Chomel, B.B., Trotignon, J. (1992). Epidemiologic surveys of dogs and cat bites in the Lyon area, France. *European Journal of Epidemiology* 8, 619-624.
- Clark, G. I., & Boyer, W. N. (1993). The effects of dog obedience training and behavioural counselling upon the human-canine relationship. *Applied Animal Behaviour Science*, 37(2), 147-159.
- Coleman, B. N., Johnson, S. E., Tessman, G. K., Tworek, C., Alexander, J., Dickinson, D. M., & Green, K. M. (2016). "It's not smoke. It's not tar. It's not 4000 chemicals. Case closed": exploring

attitudes, beliefs, and perceived social norms of e-cigarette use among adult users. *Drug and alcohol dependence*, 159, 80-85.

Coleman, J. A., Green, B., Garthe, R. C., Worthington Jr, E. L., Barker, S. B., & Ingram, K. M. (2016). The Coleman dog attitude scale (C-DAS): Development, refinement, validation, and reliability. *Applied Animal Behaviour Science*, 176, 77-86.

Cook, J. & Lewandowsky, S. (2011). *The debunking handbook*. St. Lucia, Australia:

Costa, E. D., Guagliumi, F., Cannas, S., Minero, M., & Palestrini, C. (2014). Can humans recognize emotional state in pet dogs by looking at their face?. *Journal of Veterinary Behavior: Clinical Applications and Research*, 9(6), e9.

Cullinan, P., Blackwell, E. J., Casey, R.A., (2004). The relationships between owner consistency and 'problem' behaviour in dogs: a preliminary study. *Proceedings of 1<sup>st</sup> meeting of the European College of Veterinary Behaviour Medicine-Companion Animals. Cremona, Italy. 22<sup>nd</sup> October, 2004.*

Curran, J. (2012). *Media and power*. Routledge.

Dangerous Dog Act. (1991). Retrieved from [http://www.legislation.gov.uk/ukpga/1991/65/pdfs/ukpga\\_19910065\\_en.pdf](http://www.legislation.gov.uk/ukpga/1991/65/pdfs/ukpga_19910065_en.pdf)

Dawson, L. C., Dewey, C. E., Stone, E. A., Guerin, M. T., & Niel, L. (2016). A survey of animal welfare experts and practicing veterinarians to identify and explore key factors thought to influence canine and feline welfare in relation to veterinary care. *Anim. Welf*, 25, 125-134.

De Mooij, M. (1998) *Global Marketing and Advertising: Understanding Cultural Paradoxes*. [http://www.legislation.gov.uk/ukpga/1991/65/pdfs/ukpga\\_19910065\\_en.pdf](http://www.legislation.gov.uk/ukpga/1991/65/pdfs/ukpga_19910065_en.pdf)

De Mooij, M., & Hofstede, G. (2011). Cross-cultural consumer behavior: A review of research findings. *Journal of International Consumer Marketing*, 23(3-4), 181-192.

Deci, E., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Springer Science & Business Media.

Deckers, L. (2010). *Motivation: Biological, Psychological, and Environmental*. 3rd ed. Boston, MA: Allyn & Bacon.

Deldalle, S. and Gaunet, F. (2014). Effects of 2 training methods on stress-related behaviors of the dog (*Canis familiaris*) and on the dog–owner relationship. *Journal of Veterinary Behavior: Clinical Applications and Research*, 9(2), pp.58-65.

Demirbas, Y. S., Ozturk, H., Emre, B., Kockaya, M., Ozvardar, T., & Scott, A. (2016). Adults' ability to interpret canine body language during a dog–child interaction. *Anthrozoös*, 29(4), 581-596.

Diesel, G., Pfeiffer, D.U, Brodbelt, D. (2007). Factors affecting the success of rehoming dogs in the UK during 2005, *Preventive Veterinary Medicine*, 84, 228-241.

*Dog: Its evolution, Behaviour and Interactions with People*, ed. J Serpell, 115-130.

Duboscq, J., Romano, V., Sueur, C., & MacIntosh, A. J. (2016). Network centrality and seasonality interact to predict lice load in a social primate. *Scientific reports*, 6, 22095.

Duffy, D. L., Hsu, Y., & Serpell, J. A. (2008). Breed differences in canine aggression. *Applied Animal Behaviour Science*, 114(3-4), 441-460.

Dussich, J. P., & Maekoya, C. (2007). Physical child harm and bullying-related behaviors: A comparative study in Japan, South Africa, and the United States. *International journal of offender therapy and comparative criminology*, 51(5), 495-509.

Eagly, A. H., Chaiken, S. (1998). Attitude structure and function.

Engebretson, D., & Fullmer, D. (1970). Cross-cultural differences in territoriality: Interaction distances of native Japanese, Hawaii Japanese, and American Caucasians. *Journal of Cross-Cultural Psychology*, 1(3), 261-269.

Evening Standard. (2018). Retrieved from <https://www.standard.co.uk/lifestyle/most-popular-dog-breeds-in-london-a3967736.html>

Fazio, R.H. and Olson, M.A. (2007). Attitudes: Foundations, functions, and consequences. *The Sage handbook of social psychology*, pp.123-145.

- Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude–perception and attitude–behavior relations: An investigation of the 1984 presidential election. *Journal of personality and social psychology*, 51(3), 505.
- Feshbach, S. (1964). The function of aggression and the regulation of aggressive drive. *Psychological review*, 71(4), 257.
- Fidler, M., Light, P., & Costall, A. (1996). Describing dog behavior psychologically: Pet owners versus non-owners. *Anthrozoös*, 9(4), 196-200.
- Field, A. (2000). Postgraduate statistics: Cluster analysis. Retrieved January, 26, 2010.
- Finch, H. (2005). Comparison of distance measures in cluster analysis with dichotomous data. *Journal of Data Science*, 3(1), 85-100.
- Fishbein, M., Ajzen, I. (1975). Belief, Attitude, Intention, and Behaviour: An Introduction to Theory and Research.
- Fisher, J. (2001). Think Dog: *An Owner's Guide to Canine Psychology*. Octopus Publishing
- Fogle, B. The Dog's Mind: Understanding Your Dog's Behavior, 1992. *Howell Books*, 195-203.
- Frangakis, C.E., Petridou, E. (2003). Modelling risk factors for injuries from dog bites in Greece: a case-only design and analysis. *Accident Analysis and Prevention* 35, 435-438.
- Franken, R. (2006). *Human motivation* (6th ed). Florence, KY: Wadsworth.
- Fraser, D. (2008). Understanding animal welfare. *Acta Veterinaria Scandinavica*, 50(1), S1.
- Fraser, D., Weary, D. M., Pajor, E. A., & Milligan, B. N. (1997). A scientific conception of animal welfare that reflects ethical concerns.
- Fratkin, J. L., & Baker, S. C. (2013). The role of coat color and ear shape on the perception of personality in dogs. *Anthrozoös*, 26(1), 125-133.
- Friedman, S.G. (2001). The ABCs of Behaviour, *Original Flying Machine*, Issue 9: Nov-Dec



Friedman, S. G. (2009). Behavior Fundamentals: Filling the Behaviour-Change Toolbox, *J Applied Comp Anim Behaviour*, 3(1): 36-40.

Fujihara, T., Kohyama, T., Andreu, J.M., Ramírez, J.M., (1999). Justification of interpersonal aggression in Japanese, American, and Spanish students. *Aggressive Behaviour* 25: 185-195.

Fujisan co.jp. (2014). <http://www.fujisan.co.jp/cat303/cat306/>

Furnell, C., & Finlay, F. (2015). Reducing dog bites in children. *Community practitioner*, 88(4), 28-30.

Galbraith, P. W., & Karlin, J. G. (Eds.). (2012). *Idols and Celebrity in Japanese Media Culture*. Springer.

Gazzano, A., Zilocchi, M., Massoni, E., & Mariti, C. (2013). Dogs' features strongly affect people's feelings and behaviour toward them. *Journal of Veterinary Behaviour: Clinical Applications and Research*, 8(4), 213-220.

Geary, D. C., Gilger, J. W., & Elliott-Miller, B. (1992). Gender differences in three-dimensional mental rotation: A replication. *The Journal of genetic psychology*, 153(1), 115-117.

Gelfand, M.J., Nishii, L.H., Holcombe, K.M., Dyer, N., Ohbuchi, K.I., & Fukuno, M. (2001). Cultural influences on cognitive representations of conflict: Interpretations of conflict episodes in the United States and Japan. *Journal of Applied Psychology*, 86, 1059–1074.

Gelman, A. (2008). David Park, Boris Shor, Joseph Bafumi, Jeronimo Cortina, *Red State, Blue State, Rich State, Poor State: Why Americans Vote the Way They Do*, Princeton University Press.

Gendron, M., Roberson, D., van der Vyver, J. M., & Barrett, L. F. (2014). Perceptions of emotion from facial expressions are not culturally universal: evidence from a remote culture. *Emotion*, 14(2), 251.

Gershman, K., Sacks, J., Wright, J. (1994). Which dogs bite – a case control study of risk factors. *Pediatrics* 93, 913-917.

Ghirlanda, S., Acerbi, A., & Herzog, H. (2014). Dog Movie Stars and Dog Breed Popularity: A

Case Study in Media Influence on Choice. *Plos One*. E106565.

Gilchrist, J., Sacks, J. J., White, D., & Kresnow, M. J. (2008). Dog bites: still a problem?. *Injury prevention, 14*(5), 296-301.

Glam. (2008). Holly Dawsey·July 30, 2018,  
Retrieved from <https://www.glam.com/relationships/study-women-prefer-spending-time-with-their-dog-than-their-parnter/>

Goodwin, D., Bradshaw, J. W.S., Wickens, S. M., (1997). Paedomorphosis affects agonistic visual signals of domestic dogs. *Animal Behaviour* .53, 2997-304.

Google co. search. (2017). Retrieved from  
[https://www.google.co.jp/search?q=UK+dog+annual+magazines&oq=UK+dog+annual+maga-zines&gs\\_l=psy-ab.12...0.0.0.29869.0.0.0.0.0.0.0.0.0.0.0...0...1..64.psy-ab..0.0.0.fWwdcPyONcU](https://www.google.co.jp/search?q=UK+dog+annual+magazines&oq=UK+dog+annual+maga-zines&gs_l=psy-ab.12...0.0.0.29869.0.0.0.0.0.0.0.0.0.0.0...0...1..64.psy-ab..0.0.0.fWwdcPyONcU)

Gray, J. A. (1982). The neuropsychology of anxiety. Oxford, England: Oxford University Press Group. UK.

Grilli, R., Ramsay, C., & Minozzi, S. (2002). Mass media interventions: effects on health services utilisation. *Cochrane Database Syst Rev*, 1(1).

Gudykunst WB, San Antonio P. (1993). Approaches to the study of communication in in Japan and the United States. In: Gudykunst WB Ed. Communication in Japan and the United States. Albany: State University of New York Press; pp. 18-47.

Gudykunst, W. B., Matsumoto, Y., Ting-Toomey, S., Nishida, T., Kim, K., & Heyman, S. (1996). The influence of cultural individualism-collectivism, self construals, and individual values on communication styles across cultures. *Human communication research, 22*(4), 510-543.

Guo, K., Meints, K., Hall, C., Hall, S., & Mills, D. (2009). Left gaze bias in humans, rhesus monkeys and domestic dogs. *Animal cognition, 12*(3), 409-418.

Gurevitch, M., Bennett, T., Curran, J., & Woollacott, J. (Eds.). (1982). *Culture, society and the media* (Vol. 759). London: Methuen.

- HAPP. (2012). Retrieved from [http://www.happ.or.jp/files/110711\\_shiiku.pdf](http://www.happ.or.jp/files/110711_shiiku.pdf)
- HSCIC. (2015). Retrieved from <http://digital.nhs.uk/catalogue/PUB17615/prov-mont-hes-admi-ouptp-ae-April%202014%20to%20February%202015-toi-rep.pdf>
- Hall, E. T. (1976). *Beyond culture*. New York: Doubleday.
- Happer, C., & Philo, G. (2013). The role of the media in the construction of public belief and social change. *Journal of social and political psychology*, 1(1), 321-336.
- Harandi, S. R. (2015). Effects of e-learning on Students' Motivation. *Procedia-Social and Behavioural Sciences*, 181, 423-430.
- Hart, A. (1987). Socialisation effects of service dogs for people with disabilities. *Anthorozoos*. 1(1), 41-44.
- Hart, L. A. (1995). Dogs as human companions: a review of the relationship. *The domestic dog: Its evolution, behaviour and interactions with people*, 161-178.
- Haug, L. I. (2008). Canine aggression toward unfamiliar people and dogs. *Veterinary Clinics of North America: Small Animal Practice*, 38(5), 1023-1041.
- Haverbeke, A., Laporte, B., Depiereux, E., Giffroy, J. M., & Diederich, C. (2008). Training methods of military dog handlers and their effects on the team's performances. *Applied Animal Behaviour Science*, 113(1), 110-122.
- Heath, S. (2005). WHY DO DOGS BITE? *EJCAP* 15(2).
- Hecht, J., Miklósi, Á., & Gácsi, M. (2012). Behavioral assessment and owner perceptions of behaviors associated with guilt in dogs. *Applied animal behaviour science*, 139(1-2), 134-142.
- Hermeking, M. (2005). Culture and internet consumption: contributions from cross-cultural marketing and advertising research. *Journal of Computer-Mediated Communication*, 11(1), 192-216.
- Herron, M.E, Shofer, F. S, Reisner, I. R. (2009). Survey of the use and outcome of confrontational and non-confrontational training methods in client-owned dogs showing undesired behaviours. *Applied Animal Behaviour Science*. 117, 47-54.
- Hiby, E. F., Rooney, N. J., Bradshaw, J.W.S. (2004). Dog training methods: their use, effectiveness

and interaction with behaviour and welfare. *Anm. Wef* 13, 63-69

Ho, L. A., & Kuo, T. H. (2010). How can one amplify the effect of e-learning? An examination of high-tech employees' computer attitude and flow experience. *Computers in Human Behaviour*, 26(1), 23-31.

Hoffer, E. (2002). *The True Believer*, Harper Perennial Modern Classics.

Hofstede, G. (1980) *Culture's Consequences: International Differences in Work-related Values*. Beverly Hills, CA: Sage

Hofstede, G. (1980). Motivation, leadership, and organization: do American theories apply abroad?. *Organizational dynamics*, 9(1), 42-63.

Hofstede, G. (1984). Cultural dimensions in management and planning. *Asia Pacific journal of management*, 1(2), 81-99.

Hofstede, G. (1984). The cultural relativity of the quality of life concept. *Academy of Management review*, 9(3), 389-398.

Hofstede, G. (1991) *Cultures and Organizations: Software of the Mind*. London: McGraw-Hill.

Hofstede, G. (1993) 'Cultural Constraints in Management Theories', *Academy of Management Executive* 7(1), 81-94.

Hofstede, G. (1994) *Cultures and Organizations: Software of the Mind*. London: Harper Collins Business.

Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Online readings in psychology and culture*, 2(1), 8.

Hofstede, G. (2019). *Hofstede Insights*, Retrieved from, <https://www.hofstede-insights.com/models/national-culture/>

Hogg, M., & Vaughan, G. (2009). *Essentials of social psychology*. Pearson Education.

Hong, J. W., Muderrisoglu, A., & Zinkhan, G. M. (1987). Cultural differences and advertising

expression: A comparative content analysis of Japanese and US magazine advertising. *Journal of advertising*, 16(1), 55-68.

Horisberger, U., Stark, K.D.C., Rufenacht, J., Pillonel, C., Steiger, A. (2004). The epidemiology of dog bite injuries in Switzerland – Characteristics of victims, biting dogs and circumstances. *Anthrozoos* 17, 320-339.

Horowitz, A. (2009). Disambiguating the “guilty look”: Salient prompts to a familiar dog behaviour. *Behavioural processes*, 81(3), 447-452.

Horwitz, D. (2012). An update on canine human directed aggression. *84<sup>th</sup> Annual Western Veterinary Conference*.

Houpt, K. A. (2006). Terminology Think Tank: Terminology of aggressive Behaviour. *Journal of Veterinary Behaviour* 1, 39-41

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

Hsu, Y., & Sun, L. (2010). Factors associated with aggressive responses in pet dogs. *Applied Animal Behaviour Science*, 123(3-4), 108-123.

Huitt, W. (2003a). The affective system. *Educational Psychology Interactive*. Valdosta, GA: Valdosta State University. Retrieved from <http://www.edpsycinteractive.org/topics/affect/affect.html>

Huitt, W. (2003b). The information processing approach to cognition. *Educational Psychology Interactive*. Valdosta, GA: Valdosta State University. Retrieved from <http://www.edpsycinteractive.org/topics/cognition/infoproc.html>

Hull, C. L. (1943). *Principles of behaviour*. New York: Appleton-Century-Crofts.

Hull, R., Neaves, P. and Bedford-Roberts, J. (1997) ‘Towards situated computing’, Proceedings of the First International Symposium on Wearable Computers (ISWC ‘97), p.146.

Humphreys, M. S., Revelle, W. (1984). Personality, motivation, and performance: a theory of the relationship between individual differences and information processing. *Psychological Review*, 91, 153-184.

Hwang, A. D., Wang, H. C., & Pomplun, M. (2011). Semantic guidance of eye movements in real-world scenes. *Vision research*, 51(10), 1192-1205.

Ishida, O. (2008). *Gendai Nihonjinno Doubutsukan* (The view of Japanese towards animals in a Modern society). Being net press, 22-26.

JPFA (Japan Pet food association). (2018). Retrieved from

<https://petfood.or.jp/data/chart2018/4.pdf>

<https://petfood.or.jp/data/chart2018/11.pdf> ,

<https://petfood.or.jp/data/chart2018/9.pdf>

<https://petfood.or.jp/data/chart2018/3.pdf>

Jagoe, A., & Serpell, J. (1996). Owner characteristics and interactions and the prevalence of canine behaviour problems. *Applied Animal Behaviour Science*, 47(1-2), 31-42.

Jansen, G. J., Dassen, T. W., Burgerhof, J. G., & Middel, B. (2006). Psychiatric nurses' attitudes towards inpatient aggression: Preliminary report of the development of Attitude Towards Aggression Scale (ATAS). *Aggressive Behavior: Official Journal of the International Society for Research on Aggression*, 32(1), 44-53.

Japan Today. (2008). Retrieved from <http://www.japantoday.com/>

Jasper, J. M., & Nelkin, D. (1992). The animal rights crusade. *Life in Society*, 225.

Johns, G. (2006). The essential impact of context on organizational behaviour. *Academy of Management Review*, 31, 386-408.

Jones, R. L. (1984). *Attitudes and Attitude Change in Special Education: Theory and Practice*. The Council for Exceptional Children, 1920 Association Dr. Reston, VA 22091.

Journalism.co.UK.(2017).<https://www.journalism.co.uk/news-commentary/the-magazine-market-isn-t-dead-it-s-different/s6/a698229/>

Katz, D., & Stotland, E. (1959). A preliminary statement to a theory of attitude structure and change. *Psychology: A study of a science*, 3, 423-475.

Katz, E., Haas, H., & Gurevitch, M. (1973). On the use of the mass media for important things. *American sociological review*, 164-181.

Kawakami, N., & Haratani, T. (1999). Epidemiology of job stress and health in Japan: review of current evidence and future direction. *Industrial health*, 37(2), 174-186.

Kean, H. (1998). *Animal rights: Political and social change in Britain since 1800*. Reaktion Books.

Kellerman (Eds.), *Emotion: Theory, research, and experience: Vol. 3. Biological foundations of emotion* (pp. 125-143) San Diego, CA: Academic Press

Kellert, S. R., Berry, J.K. (1980). Phase III: Knowledge, Affection and Basic Attitudes Toward Animals in American Society. United States Government Printing Office: Washington, DC, USA.

Kerswell, K. J., Bennett, P. J., Butler, K. L., & Hemsworth, P. H. (2009). Self-reported comprehension ratings of dog behavior by puppy owners. *Anthrozoös*, 22(2), 183-193.

Kilbourne, J., Pipher, M. (2000). *Can't Buy My Love: How Advertising Changes the Way We Think and Feel*, Free Press.

Kimura, D. (2004). Human sex differences in cognition, fact, not predicament. *Sexualities, Evolution & Gender*, 6(1), 45-53.

King, T., Marston, L. C., & Bennett, P. C. (2009). Describing the ideal Australian companion dog. *Applied Animal Behaviour Science*, 120(1), 84-93.

Kleinginna, P. R., & Kleinginna, A. M. (1981). A categorized list of motivation definitions, with a suggestion for a consensual definition. *Motivation and emotion*, 5(3), 263-291.

Kobelt, A. J., Hemsworth, P.H., Barnet, J.L., Coleman, G.J. (2003). A survey of dog ownership in suburban Australia-conditions and behaviour problems. *Applied. Animal. Behaviour. Sci.* 82, 137-148.

- Konok, V., Nagy, K., & Miklósi, Á. (2015). How do humans represent the emotions of dogs? The resemblance between the human representation of the canine and the human affective space. *Applied Animal Behaviour Science*, 162, 37-46.
- Kottferova, J., Marekova, J., Jakuba, T. (2008). Aggressive Behaviour of dog and its ethological function. *FOLIA VETERINARIA* 52, 73-74
- Krauss, E. S. (1996). *Media and politics in Japan*. University of Hawaii Press.
- Kroeber, A., Kluckhohn, C. (1952) *Culture: A Critical Review of Concepts and Definitions*. Papers of the Peabody Museum, Harvard University, 47
- Kuhne, F., Höbller, J. C., & Struwe, R. (2012). Effects of human–dog familiarity on dogs’ behavioural responses to petting. *Applied animal behaviour science*, 142(3-4), 176-181.
- Kujala, M. V. (2017). Canine emotions as seen through human social cognition. *Animal Sentience: An Interdisciplinary Journal on Animal Feeling*, 2(14), 1.
- Kujala, M. V., Kujala, J., Carlson, S., & Hari, R. (2012). Dog experts' brains distinguish socially relevant body postures similarly in dogs and humans. *PloS one*, 7(6), e39145.
- Kumar, R. (1999). Viral encephalitis of public health significance in India: Current status. *The Indian Journal of Pediatrics*, 66(1), 73-83.
- Lansford J.E, Skinner A.T. (2011). Relational and physical aggression in nine countries. Presented at the *SRCD 2011 Biennial Meeting, Montreal*, April 2011.
- Lee, S. (2018). Discreet self-expression in Japanese assertiveness, Graduate School of Human Ecology, Kinjo Gakuin University
- Lewandowsky, S., Ecker, U. K., Seifert, C. M., Schwarz, N. & Cook, J. (2012). Misinformation and its correction: Continued influence and successful debiasing. *Psychological Science in the Public Interest*, 13(3), 106-131.
- Li, Y., Wang, M., Wang, C., & Shi, J. (2010). Individualism, collectivism, and Chinese adolescents' aggression: Intracultural variations. *Aggressive Behaviour: Official Journal of the International Society for Research on Aggression*, 36(3), 187-194.



Loveridge, G. G. (1998). Environmentally enriched dog housing. *Applied Animal Behaviour Science*, 59(1-3), 101-113.

Luescher, A. U., & Reisner, I. R. (2008). Canine aggression toward familiar people: a new look at an old problem. *Veterinary Clinics of North America: Small Animal Practice*, 38(5), 1107-1130.

Mail Online. (2016). Retrieved from <http://www.dailymail.co.uk/news/article-3486847/Dog-owners-spend-time-talking-pet-partner-according-new-study.html>

Mariti, C., Gazzano, A., Moore, J. L., Baragli, P., Chelli, L., & Sighieri, C. (2012). Perception of dogs' stress by their owners. *Journal of Veterinary Behavior: Clinical Applications and Research*, 7(4), 213-219.

Mariti, C., Falaschi, C., Zilocchi, M., Fatjó, J., Sighieri, C., Ogi, A., & Gazzano, A. (2017). Analysis of the intraspecific visual communication in the domestic dog (*Canis familiaris*): A pilot study on the case of calming signals. *Journal of Veterinary Behavior*, 18, 49-55.

Markus, H.R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224-253.

Martens, P., Enders-Slegers, M. J., & Walker, J. K. (2016). The emotional lives of companion animals: Attachment and subjective claims by owners of cats and dogs. *Anthrozoös*, 29(1), 73-88.

Matos, R. E., Jakuba, T., Mino, I., Fejsakova, M., Demeova, A., & Kottferova, J. (2015). Characteristics and risk factors of dog aggression in the Slovak Republic. *Veterinarni Medicina*, 60(8).

Matsumoto, D. (1996) *Culture and Psychology*. Pacific Grove, CA: Brooks/Cole.

Matsumoto, D. (1999). Culture and self: An empirical assessment of Markus and Kitayama's theory of independent and interdependent self-construals. *Asian Journal of Social Psychology*, 2, 289-310.

Matsumoto, D. (2006). Are cultural differences in emotion regulation mediated by personality traits? *Journal of Cross-Cultural Psychology*, 37(4), 421-437.

- McBride, A. (2006). Human emotional aspects of pet aggression.
- McDonald, S., Rushby, J., Li, S., de Sousa, A., Dimoska, A., James, C., & Togher, L. (2011). The influence of attention and arousal on emotion perception in adults with severe traumatic brain injury. *International Journal of Psychophysiology*, 82(1), 124-131.
- McMillan, F. D., Serpell, J. A., Duffy, D. L., Masaoud, E., & Dohoo, I. R. (2013). Differences in behavioral characteristics between dogs obtained as puppies from pet stores and those obtained from noncommercial breeders. *Journal of the American Veterinary Medical Association*, 242(10), 1359-1363.
- McNicholas, J., Collis, G. (2000). Dogs as catalysts for social interactions: Robustness of the effect. *British Journal of Psychology*, 91(1), 61–70.
- Mech, L. D. (1999). Alpha status, dominance, and division of labor in wolf packs. *Canadian Journal of Zoology*, 77(8), 1196-1203.
- Mech, L. D. (2000). Leadership in wolf, *Canis lupus*, packs. *Can. Field-Nat.* 114: 259–263
- Mendl, M., Burman, O. H., & Paul, E. S. (2010). An integrative and functional framework for the study of animal emotion and mood. *Proceedings of the Royal Society B: Biological Sciences*, 277(1696), 2895-2904.
- Mertens I, Siegmund H, Grusser OJ (1993) Gaze motor asymmetries in the perception of 43 faces during a memory task. *Neuropsychologia* 31:989-998
- Messam, L. L. M., Kass, P. H., Chomel, B. B., & Hart, L. A. (2008). The human–canine environment: a risk factor for non-play bites?. *The Veterinary Journal*, 177(2), 205-215.
- Messent, P. (1983). *Social facilitation of contact with other people by pet dogs*. In A. Katcher, & A. Beck (Eds.), *New perspectives on our lives with companion animals*, pp. 37–46. Philadelphia: University of Pennsylvania Press.
- Miele, M., Veissier, I., Evans, A., & Botreau, R. (2011). Animal welfare: establishing a dialogue between science and society. *Animal Welfare*, 20(1), 103.

- Miller, A. (2010). Taibatsu: 'corporal punishment' in Japanese socio-cultural context. In *Japan forum* (Vol. 21, No. 2, pp. 233-254). Taylor & Francis Group.
- Miller, D. D., Staats, S. R., Partlo, C., Rada, K. (1996). Factors associated with the decision to surrender a pet to an animal shelter. *Journal of the American Veterinary Association*, 209, 738–742.
- Miller, J. G. (1994). Cultural diversity in the morality of caring: Individual oriented versus duty-based interpersonal moral codes. *Cross-Cultural Research*, 28, 3-39.
- Miller, M., Lago, D. (1990). The well-being of old women: importance of pet and human relations. *Anthozoos*.3: 245-252
- Mills, D. S., & Mills, C. B. (2003, August). A survey of the behaviour of UK household dogs. In *Fourth International Veterinary Behaviour Meeting Proceedings* (No. 352, pp. 93-98).
- Mills, D., Millman, S., & Levine, E. (2007). Applied animal behaviour: assessment, pain and aggression. *Animal Physiotherapy: Assessment, Treatment and Rehabilitation of Animals*. C. McGowan, L. Goff, and N. Stubbs, ed. Blackwell Publishing, Ames, IA, 3-13.
- Mills, D., & Zulch, H. (2010). Appreciating the role of fear and anxiety in aggressive behaviour by dogs. *Veterinary Focus*, 20(1), 44-49.
- Mills, D., Braem Dube, M., Zulch H. (2013) Principles of Pheromonotherapy. *Stress and Pheromonotherapy in small Animal Clinical Behaviour*, West Sussex, Wiley-Blackwell, 127-145.
- Mills, D., Karagiannis, C., & Zulch, H. (2014). Stress—its effects on health and behaviour: a guide for practitioners. *Veterinary Clinics of North America: Small Animal Practice*, 44(3), 525-541.
- Mills, D., van der Zee, E., & Zulch, H. (2014). When the bond goes wrong: problem behaviours in the social context. In *The Social Dog* (pp. 223-245). Academic Press.
- Mills, D. S. (2017). Perspectives on assessing the emotional behaviour of animals with behaviour problems. *Current Opinion in Behavioural Sciences*, 16, 66-72.

Mills, D., & Westgarth, C. (2017). *Dog bites: a multidisciplinary perspective*. 5M Publishing.

Ministry of International affairs and communications. (2018). Retrieved from <http://www.soumu.go.jp/johotsusintokei/whitepaper/ja/h30/html/nd252120.html>

Ministry of International affairs and communications. (2018). Retrieved from <http://www.soumu.go.jp/johotsusintokei/whitepaper/ja/h30/html/nd252120.html>

Ministry of the Environment, Government of Japan, (Amendment). (2012). Retrieved from <https://www.env.go.jp/council/toshin/t14-h1309/t14-h1309-1.pdf>

Molnár, C., Pongrácz, P., Faragó, T., Dóka, A., & Miklósi, Á. (2009). Dogs discriminate between barks: The effect of context and identity of the caller. *Behavioural processes*, 82(2), 198-201.

Molnár, C., Pongrácz, P., & Miklósi, A. (2010). Seeing with ears: Sightless humans' perception of dog bark provides a test for structural rules in vocal communication. *The Quarterly Journal of Experimental Psychology*, 63(5), 1004-1013.

Morgan, M., Palmer, J. (2007). Dog bites. *British Medical Journal* 334, 413-417.

Morris, P. H., Doe, C., & Godsell, E. (2008). Secondary emotions in non-primate species? Behavioural reports and subjective claims by animal owners. *Cognition and emotion*, 22(1), 3-20.

Morris, P., Knight, S., & Lesley, S. (2012). Belief in animal mind: does familiarity with animals influence beliefs about animal emotions?. *Society & Animals*, 20(3), 211-224.

Mowday, R. T., & Sutton, R. I. (1993). Organizational behaviour: Linking individuals and groups to organizational contexts. *Annual review of psychology*, 44(1), 195-229.

Mueller, B. (1987). Reflections of Culture: An Analysis of Japanese and American Advertising Appeals. *Journal of Advertising Research*, 27(3), 51-59.

Munsell, K. L., Canfield, M., Templer, D. I., Tangan, K., & Arikawa, H. (2004). Modification of the pet attitude scale. *Society & Animals*, 12(2), 137-142.

Nazarlou, M. (2013). Research on Negative Effect on E-Learning. *International Journal of Mobile Network Communications & Telematics (IJMNCT)*, 3(2).

Netto, W. J., & Planta, D. J. (1997). Behavioural testing for aggression in the domestic dog. *Applied animal behaviour science*, 52(3-4), 243-263.

Neuliep, J. W. (1997). A cross-cultural comparison of teacher immediacy in American and Japanese college classrooms. *Communication Research*, 24(4), 431-451.

NHS digital. (2019). Retrieved from <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity/2017-18>

Nippon. Com. (2016). Retrieved from <http://www.nippon.com/en/nipponblog/m00106/>

Nordhielm, C. L. (2002). The influence of level of processing on advertising repetition effects. *Journal of consumer research*, 29(3), 371-382.

O'Sullivan, E. N., Jones, B. R., O'Sullivan, K., & Hanlon, A. J. (2008). The management and behavioural history of 100 dogs reported for biting a person. *Applied Animal Behaviour Science*, 114(1), 149-158

Office for National Statistics (2016). Retrieved from <https://www.ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2016>

Office for National Statistics (2018). Retrieved from <https://www.ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2018>

Office for National Statistics (2018). Retrieved from <https://www.ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2018>

Okagawa, T. (2017). Retrieved from <https://www.kochi-tech.ac.jp/library/ron/pdf/2017/03/14/a1180405.pdf>

- Olson, J. M., Roese, N. J., & Zanna, M. P. (1996). Expectancies. In E. T. Higgins & A. Kruglanski (Eds.), *Social psychology: A handbook of basic principles*, New York: Guilford. pp. 211–238.
- Olson, J. M., & Maio, G. R. (2003). Attitudes in social behavior. *Handbook of psychology: Personality and social psychology*, 5, 299-325.
- Orritt, R., Gross, H., Hogue, T. (2015). His Bark is Worse than His Bite: Perceptions and Rationalization of Canine Aggressive Behavior. *Human-Animal Interaction Bulletin*, 3 ( 2) , 1-20
- Orritt, R. (2016). Preventing aggressive behaviour in dogs, *Veterinary record* 179, 35.
- Overall, K. L., & Love, M. (2001). Dog bites to humans—demography, epidemiology, injury, and risk. *Journal of the American Veterinary Medical Association*, 218 (12), 1923-1934.
- Oxford Dictionaries (2018). Retrieved from <https://en.oxforddictionaries.com/definition/culture>
- Oxford Dictionaries (2018). Retrieved from <https://en.oxforddictionaries.com/definition/expectation>
- Oxley, J.A., Tibbott, A.R.H. (2012). A brief review of dog related articles in British newspapers and associated factors
- Ozanne-Smith, J., Ashby, K., Stathakis, V. Z. (2001). Dog bite and injury prevention-analysis, critical review, and research agenda. *Injury Prevention* 7, 321-326.
- Page, N. R., & Wiseman, R. L. (1993). Supervisory behavior and worker satisfaction in the United States, Mexico, and Spain. *The Journal of Business Communication* (1973), 30 (2), 161-180.
- Peachy, E. (1993). Problems with people. In: Fisher J. (editor), *The Behaviour of Dogs and Cats*. Stanley Paul, London, pp. 104-112. UK.
- Page, N. R., & Wiseman, R. L. (1993). Supervisory behaviour and worker satisfaction in the United States, Mexico, and Spain. *The Journal of Business Communication* (1973), 30(2), 161-180.

- Panksepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions*. New York: Oxford University Press.
- Panksepp, J. (2005). Affective consciousness: core emotional feelings in animals and humans. *Consciousness and Cognition* 14, 30–80.
- Pavlov, I., (1928). *Lectures on Conditioned Reflexes*. International Publishers, New York.
- Peachy, E. (1993). Problems with people. In: Fisher J. (editor), *The Behaviour of Dogs and Cats*. Stanley Paul, London, pp. 104-112. UK.
- Peretti, P. O. (1990). Elderly-animal friendship bonds. *Social Behaviour and Personality* 18(1):151-156.
- Perez-Guisado, J., Munoz-Serrano, A. (2009). Factors linked to dominance aggression in dogs (Canis familiaris). *Applied. Animal. Behaviour Science*. 62, 267-278.
- PET GAZETTE. (2018). Retrieved from <https://www.petgazette.biz/20268-uk-dog-owners-spend-57bn-on-their-pets-every-year/>
- Philips ML, David AS (1997) Viewing strategies for simple and chimeric faces: An investigation of perceptual bias in normal and schizophrenic patients using visual scan paths. *Brain Cognit* 32:225-238
- Philo, G. (2008). Active audiences and the construction of public knowledge. *Journalism Studies*, 9(4), 4535-544. doi:10.1080/14616700802114217
- Pirrone, F., Pierantoni, L., Pastorino, G. Q., & Albertini, M. (2016). Owner-reported aggressive behaviour towards familiar people may be a more prominent occurrence in pet shop-traded dogs. *Journal of Veterinary Behaviour*, 11, 13-17.
- PMFA (Pet Food Manufacturers Association UK).(2012). Retrieved from <http://www.pfma.org.uk/pet-population/>
- Podberscek, A. L. (1994). Dog on a tightrope: the position of the dog in British society as influenced by press reports on dog attacks (1988 to 1992). *Anthrozoös*, 7(4), 232-241.

- Podberscek, A. L., & Serpell, J. A. (1997). Environmental influences on the expression of aggressive behaviour in English Cocker Spaniels. *Applied Animal Behaviour Science*, 52(3-4), 215-227.
- Podberscek, A. L., & Serpell, J. A. (1997). Aggressive behaviour in English cocker spaniels and the personality of their owners. *Veterinary Record*, 141(3), 73-76.
- Podberscek, A. L. (2009). Good to pet and eat: The keeping and consuming of dogs and cats in South Korea. *Journal of Social Issues*, 65(3), 615-632.
- Pomerantz, E. M., & Wang, Q. (2009). The role of parental control in children's development in Western and East Asian countries. *Current Directions in Psychological Science*, 18(5), 285-289.
- Pongrácz, P., Molnár, C., Miklósi, A., & Csányi, V. (2005). Human listeners are able to classify dog (*Canis familiaris*) barks recorded in different situations. *Journal of comparative psychology*, 119(2), 136.
- Pongrácz, P., Molnár, C., & Miklósi, Á. (2006). Acoustic parameters of dog barks carry emotional information for humans. *Applied Animal Behaviour Science*, 100(3-4), 228-240.
- Power, T. G., Kobayashi-Winata, H., & Kelley, M. L. (1992). Childrearing patterns in Japan and the United States: A cluster analytic study. *International Journal of Behavioral Development*, 15(2), 185-205.
- Power, D., Schoenherr, T. and Samson, D., (2010). The cultural characteristic of individualism/collectivism: A comparative study of implications for investment in operations between emerging Asian and industrialized Western countries. *Journal of Operations Management*, 28(3), pp.206-222.
- Qualtrics(Qualtrics, Provo, UT, USA). Retrieved from  
[https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_1B3YZQ2Tr5smZjn](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_1B3YZQ2Tr5smZjn) (English)  
[https://unioflincoln.eu.qualtrics.com/jfe/form/SV\\_egMqDo0ZP0s3hxH](https://unioflincoln.eu.qualtrics.com/jfe/form/SV_egMqDo0ZP0s3hxH) (Japanese)
- Ramirez, J. M., Andreu, J. M., Fujihara, T., Musazadeh, Z., & Saini, S. (2007). Justification of aggression in several Asian and European countries with different religious and cultural background. *International Journal of Behavioral Development*, 31 (3), 9-15.



- Ramirez, J. M., Andreu, J. M., Fujihara, T., Musazadeh, Z., & Saini, S. (2007). Justification of aggression in several Asian and European countries with different religious and cultural background. *International Journal of Behavioral Development*, 31 (3), 9-15.
- Ramírez J.M, Lai-chu AF, Alvarado JM, Millana L. (2011). Justification of emotional and instrumental aggression in Hong Kong and Spanish university students. *The Open Psychology Journal*; 4: 49-53
- Ramirez, J. M.(2015). Applicability of a Moral Attitudes Toward Aggression Questionnaire (CAMA) in different German age Cohorts Compared with Other Cultures by a Structural Equivalence Analysis. *The Open Psychology Journal*, 8(1).
- Reisner, I. R. (2003). Differential diagnosis and management of human-directed aggression in dogs. *The Veterinary clinics of North America. Small animal practice*, 33(2), 303-320.dogs.
- Richardson, R. M., & Smith, S. W. (2007). The influence of high/low-context culture and power distance on choice of communication media: Students' media choice to communicate with professors in Japan and America. *International Journal of Intercultural Relations*, 31(4), 479-501.
- Roche, P. (2007). Pain and placebo analgesia: two sides of the same coin. *Physical Therapy Reviews*, 12(3), 189-198. doi 10.1179/108331907X222985
- Roll, A., Unshelm, J. (1997). Aggressive conflicts amongst dogs and factors affecting them. *Applied animal behaviour science*, 52(3-4), 229-242.
- Rolls, E. T. (1986). Neural systems involved in emotion in primates. In R. Plutchik & H.
- Rooney, N., Gaines, S., & Hiby, E. (2009). A practitioner's guide to working dog welfare. *Journal of Veterinary Behavior*, 4(3), 127-134.
- Rooney, N. J., & Cowan, S. (2011). Training methods and owner–dog interactions: Links with dog behaviour and learning ability. *Applied Animal Behaviour Science*, 132(3), 169-177.
- Rosado, B., García-Belenguer, S., León, M., & Palacio, J. (2007). Spanish dangerous animals act: Effect on the epidemiology of dog bites. *Journal of Veterinary Behaviour*, 2(5), 166-174.

- Rosado, B., García-Belenguer, S., León, M., & Palacio, J. (2009). A comprehensive study of dog bites in Spain, 1995–2004. *The Veterinary Journal*, 179 (3), 383-391.
- Rosenberg, M. J. & Hovland, C.I. (1960). Cognitive, affective & behavioural components of attitude. In: Rosenberg, Hovland, McGuire, Abelson & Brehm(Eds.). *Attitude Organisation & change: An analysis of consistency among attitude components*, Yale University Press, USA
- Rothschild, B. (2000). *The Body Remembers: The Psychophysiology of Trauma and Trauma Treatment*, W. W. Norton & Company.
- Rugaas, T. (2006). *On talking terms with dogs: Calming signals*. 2nd ed. Dogwise publishing.
- Russell, E.S. (1936). Playing with a dog. *Q. Rev. Biol.* 11, 1–15.
- Ryan, R., E. L. Deci (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology* 25.1: 54–67.
- Saadé, R. G., & Kira, D. (2009). Computer anxiety in e-learning: The effect of computer self-efficacy. *Journal of Information Technology Education: Research*, 8, 177-191.
- Salman, M. D., New, J. C., Scarlett, J. M., Kass, P. H., Hetts, S., & Ruch-Gallie, R. (1998). Human and animal factors related to the relinquishment of dogs and cats in 12 selected animal shelters in the USA. *Journal of Applied Animal Welfare Science*, 1, 207–226.
- Sauter, D. A., Eisner, F., Ekman, P., & Scott, S. K. (2010). Cross-cultural recognition of basic emotions through nonverbal emotional vocalizations. *Proceedings of the National Academy of Sciences*, 107(6), 2408-2412.
- Schachter, S., Singer, J.E. (1962) . Cognitive, social and physiological determinants of emotional state. *Psychological Review* 69, 379–399.
- Schalke, E., Stichnoth, J., Ott, S., & Jones-Baade, R. (2007). Clinical signs caused by the use of electric training collars on dogs in everyday life situations. *Applied Animal Behaviour Science*, 105(4), 369-380.
- Schenkel, R., 1947. Ausdrucks-Studien an Wölfen: GefangenschaftsBeobachtungen. *Behaviour* 1, 81–129

- Scherer, K. R. (1987). Toward a dynamic theory of emotion: The component process model of affective states. *Geneva Studies in Emotion and Communication*, 1(1), 1-65.
- Scherer, K. R. (2001). *Emotion, the psychological structure of*. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social and behavioral sciences*. Oxford: Pergamon
- Scherer, K.R. (2005). What are emotions? And how can they be measured? *Social Science Information*, 44, 693–727.
- Schilder, M. B., & van der Borg, J. A. (2004). Training dogs with help of the shock collar: short and long term behavioural effects. *Applied Animal Behaviour Science*, 85(3-4), 319-334.
- Schwarz, N., & Bohner, G. (2001). The construction of attitudes. In A. Tesser & N. Schwarz (Eds.), *Blackwell handbook of social psychology: Intraindividual processes*, 1, pp. 413–436). Oxford, UK: Blackwell.
- Schwitzgebel, E. (2006). Belief.
- Seksel, K., Mazurski, E. J., & Taylor, A. (1999). Puppy socialisation programs: short and long term behavioural effects. *Applied Animal Behaviour Science*, 62(4), 335-349.
- Serpell, J.A. (2004). Factors influencing human attitudes to animals and their welfare. *Animal Welfare*, 13: S145- 151.
- Shepherd, K. (2002). Development of behaviour, social behaviour and communication in dogs. In Horwitz(D.F) & Mills (Eds) *BSAVA Manual of Canine and Feline Behavioural*
- Shepherd, K. (2009). Ladder of aggression. *BSAVA manual of canine and feline behavioural medicine*, 13-16.
- Singh, N., Zhao, H., & Hu, X. (2005). Analyzing the cultural content of web sites: A cross-national comparison of China, India, Japan, and US. *International Marketing Review*, 22(2), 129-146.
- Siracusa, C. (2016). Status-related aggression, resource guarding, and fear-related aggression in 2 female mixed breed dogs. *Journal of Veterinary Behaviour: Clinical Applications and Research*, 12, 85-91.

- Spence, K. W. (1956). Behavior theory and conditioning.
- Spencer-Oatey, H. (2008) *Culturally Speaking. Culture, Communication and Politeness Theory*. 2nd edition. London: Continuum.
- Statista (2018). Retrieved from <https://www.statista.com/statistics/308218/leading-ten-pets-ranked-by-household-ownership-in-the-united-kingdom-uk/>
- Statista. (2018). Retrieved from <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>
- Statista. (2018). Retrieved from <https://www.statista.com/statistics/266376/internet-users-japan/>
- Statista. (2018). Retrieved from <https://www.statista.com/statistics/507399/total-number-of-internet-users-in-the-united-kingdom-uk-by-data-provider/>
- Straub, D., Keil, M., & Brenner, W. (1997). Testing the technology acceptance model across cultures: A three country study. *Information & management*, 33(1), 1-11.
- Sugita, H. (2001). The effects of dog ownership and attachment to dogs on Japanese dog owners' physical and emotional health —From the data of JGSS
- Svartberg, K. (2006). Breed-typical behaviour in dogs—historical remnants or recent constructs?. *Applied Animal Behaviour Science*, 96(3-4), 293-313.
- Szánthó, F., Miklósi, Á., & Kubinyi, E. (2017). Is your dog empathic? Developing a dog emotional reactivity survey. *PloS one*, 12(2), e0170397.
- Su, B., Koda, N., & Martens, P. (2018). How Japanese companion dog and cat owners' degree of attachment relates to the attribution of emotions to their animals. *PloS one*, 13(1), e0190781.
- Súilleabháin, P.Ó.(2015). Training methods and dog-owner interaction as a public health risk factor for dog bites. *Zoonoses and public health*, 62(6), pp.489-489.
- Tabachnick, B. G., & Fidell, L. S. (1996). Using multivariate statistic. Northridge. Cal.: Harper

Takahashi, T. (2003) 'Media, Audience Activity and Everyday Life – The Case of Japanese Engagement with Media and ICT'. Doctoral Dissertation. The London School of Economics and Political Science, University of London.

Takeuchi, Y., Ogata, N., Houpt, K. A., & Scarlett, J. M. (2001). Differences in background and outcome of three behavior problems of dogs. *Applied Animal Behaviour Science*, 70(4), 297-308.

Tami, G., & Gallagher, A. (2009). Description of the behaviour of domestic dog (*Canis familiaris*) by experienced and inexperienced people. *Applied Animal Behaviour Science*, 120(3-4), 159-169.

Tanaka, K. (1998). Japanese women's magazines: The language of aspiration. *The worlds of Japanese popular culture: Gender, shifting boundaries and global cultures*, 110-32.

Templer, D. I., & Arikawa, H. (2011). The pet attitude scale. In *The psychology of the human-animal bond* (pp. 335-359). Springer, New York, NY.

The Guardian. (2012). Retrieved from

<https://www.theguardian.com/lifeandstyle/2012/jun/08/why-japan-prefers-pets-to-parenthood>

The Kennel Club. (2018). Retrieved from

[https://www.thekennelclub.org.uk/media/1159441/top\\_20\\_breeds\\_2016\\_-\\_2017.pdf](https://www.thekennelclub.org.uk/media/1159441/top_20_breeds_2016_-_2017.pdf)

The Telegraph. (2012). Retrieved from

<http://www.telegraph.co.uk/health/healthnews/9463754/Number-of-dog-bite-victims-soars-as-gangs-train-animals-to-fight.html>

Thompson, P. G. (1997). The public health impact of dog attacks in a major Australian city. *Med J Aust* 167 (3),129-132.

Thorndike, E. L. (1898). Animal intelligence: An experimental study of the associative processes in animals. *The Psychological Review: Monograph Supplements*, 2(4), i.

Triandis, H. C. (1989). The self and social behavior in differing cultural contexts. *Psychological review*, 96(3), 506.

Triandis, H. C., Bontempo, R., Villareal, M. J., Asai, M., & Lucca, N. (1988). Individualism and collectivism: Cross-cultural perspectives on self-ingroup relationships. *Journal of personality and Social Psychology*, 54(2), 323.

Triandis, H. C. (1995). *Individualism and Collectivism*. Oxford: Westview Press.

Tylor, Edward B. (1873). *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Language, Art, and Custom*. 2nd ed. 2 vols. London: John Murray

UK National Statistics. (2010). Retrieved from <http://www.statistics.gov.uk/hub/index.html>

Van Eeckhout, G. P., & Wylock, P. (2005). Dog bites: an overview. *European Journal of Plastic Surgery*, 28(3), 233-238.

Van der Dennen, J. M. G. (1980). Problems in the Concepts and Definitions of Aggression, Violence, and Some Related Terms.

van Hooff, J. A., & Wensing, J. A. (1987). Dominance and its behavioral measures in a captive wolf pack.

van der Borg, J. A., Beerda, B., Ooms, M., de Souza, A. S., van Hagen, M., & Kemp, B. (2010). Evaluation of behaviour testing for human directed aggression in dogs. *Applied Animal Behaviour Science*, 128(1-4), 78-90.

Veevers, J.E. (1985). The social meaning of pets: *In Pets and the family (Sussman, M.ed)*. Vol 8 of *Marriage and Family Review* pp. 11-30.

Vernon, M. D. (1955). The functions of schemata in perceiving. *Psychological Review*, 62(3), 180.

Vogel, E. F. (1963). Entrance Examinations and Emotional Disturbances in Japan's New Middle Class. *RJ Smith and RK Beardsley, t*, 140-52.

Walker, J., Dale, A., Waran, N., Clarke, N., Farnworth, M., & Wemelsfelder, F. (2010). The assessment of emotional expression in dogs using a Free Choice Profiling methodology. *Animal Welfare*, 19(1), 75-84.

- Walker, J. K., McGrath, N., Nilsson, D. L., Waran, N. K., & Phillips, C. J. (2014). The role of gender in public perception of whether animals can experience grief and other emotions. *Anthrozoös*, 27(2), 251-266.
- Walsh, E. A., McBride, E. A., Bishop, F., & Muser Leyvraz, A. (2007). Influence of breed, handler appearance and people's experience of dogs on their perception of the temperament of a breed of dog in Ireland.
- Walster, E., Walster, G. W., & Berscheid, E. (1978). Equity: Theory and research.
- Watson, D., Wiese, D., Vaidya, J., & Tellegen, A. (1999). The two general activation systems of affect: Structural findings, evolutionary considerations, and psychobiological evidence. *Journal of personality and social psychology*, 76(5), 820.
- Wells, D. L. (2004). The facilitation of social interactions by domestic dogs, *Anthorozoos*, 17(4), 340-352
- Westgarth, C., & Watkins, F. (2015). A qualitative investigation of the perceptions of female dog-bite victims and implications for the prevention of dog bites. *Journal of veterinary behavior: Clinical applications and research*, 10 (6), 479-488.
- Westgarth, C., Brooke, M., & Christley, R. M. (2018). How many people have been bitten by dogs? A cross-sectional survey of prevalence, incidence and factors associated with dog bites in a UK community. *J Epidemiol Community Health*, jech-2017.
- Whitehead, S. (2018). Retrieved from <http://sarahwhitehead.com>
- Wiest, J. B. (2016). The Role of Mass Media in the Transmission of Culture. In *Communication and Information Technologies Annual: [New] Media Cultures* (pp. 203-219). Emerald Group Publishing Limited.
- Wilson, C. C., Netting, F. E., & New, J. C. (1987). The pet attitude inventory. *Anthrozoös*, 1 (2), 76-84.
- Wise, R. A. (2004). Dopamine, learning and motivation. *Nature reviews neuroscience*, 5 (6), 483-494.

Wyer, R. S., & Albarracín, D. (2005). Belief formation, organization, and change: Cognitive and motivational influences. *The handbook of attitudes*, 273, 322.

Würtz, E. (2005). Intercultural communication on Web sites: a cross-cultural analysis of Web sites from high-context cultures and low-context cultures. *Journal of Computer-Mediated Communication*, 11 (1), 274-299.

Yoneyama, S. (2012). *The Japanese high school: Silence and resistance*. Routledge.

Zasloff, R. L., & Kidd, A. H. (1994). Loneliness and pet ownership among single women. *Psychological Reports*, 75(2), 747-752.

Zillmann, D. (1979). *Hostility and aggression*. Hillsdale, N J: Erlbaum.

Ziv, G. (2017). The effects of using aversive training methods in dogs—A review. *Journal of Veterinary Behavior: Clinical Applications and Research*, 19, 50-60.