



Universiteit Utrecht

The relationship between dog-directed parenting styles and overweight in dogs

Master research project



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December 2018
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Abstract

OBJECTIVE. The last decades, the number of overweight dogs is increasing. Since it is known that particular parenting styles, the authoritarian, the permissive and the uninvolved style, are related to a higher risk of developing overweight in children, a similar association could exist for dogs. The aim of this study was to investigate the associations between original parenting styles or dog-directed parenting styles and overweight in dogs. In addition, the relation between (dog-directed) parenting styles and obedience and trainability of the dog was examined, because a direct relation was expected which could be useful to improve training programs and facilitate the training of dogs.

METHODS. Questionnaires including items about parenting styles (PS) and obedience and trainability were completed by dog owners. Body condition score of the dogs was determined using the 9-point scale. Participants were classified in both original PS and dog-directed parenting styles (DDPS). Chi squared tests were applied to determine associations between (dog-directed) PS and overweight. Logistic regression analysis was used to assess a relationship between (dog-directed) PS and obedience and trainability.

RESULTS. Using cross-tabulation and chi squared tests, it has been analysed whether there are any associations between the (dog-directed) parenting styles and dogs being overweight. It appears that there is a lower percentage of overweight in the mixed group than in the other groups. However, these differences are not significant.

Independent t-tests revealed that the score of obedience and trainability was statistically significantly higher for the 'AUI' group ($69,172 \pm 13,656$, $p = 0,004$) compared to the 'AUN' group ($54,370 \pm 17,195$). Also the score for the 'AUI' group ($69,172 \pm 13,656$, $p = 0,023$) was statistically significantly higher compared to the 'AUT' group ($58,350 \pm 16,545$). There was no statistically significant difference between the other groups.

CONCLUSIONS. In this research no unequivocal relationship is found between the different parenting styles and overweight in dogs. However, the researchers are aware of the fact that both parenting styles and obesity are complex phenomena which may be influenced by other factors. As such, more research is needed. It has been shown that AUI leads to a better response regarding to obedience and trainability. These findings are relevant for improving training programs for dogs.



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Introduction

Parenting styles

Previous research demonstrated four different parenting styles (PS) for raising children [1]. These are the authoritarian, authoritative, permissive and uninvolved parenting styles (in this study mentioned as 'original PS'). When a parent is characterised by the authoritarian parenting style, obedience is demanded and the child is not expected to cross boundaries. Instead of leaving the child free to make his own choices, the child is guided in a directive and demanding manner. In the authoritative parenting style the parent is both demanding and responsive. There are certain rules that have to be obeyed, but child's feelings are taken into consideration. Parents using the permissive parenting style, focus on the choices and needs of their child and formulate only a few rules for them. Although there are not many rules, in this style, parents are actively involved in their child's development. The fourth parenting style is called the uninvolved style, because little attention is paid to the child, no limits are set and no rules are imposed. Robinson et al. (1995) developed a questionnaire which included 62 items (PSDQ-62) to recognise these parenting styles [2]. In 2001 he developed a shortened questionnaire including 32 items (PSDQ-32) [3].

The influence of these parenting styles on the well-being and behaviour of children has been studied and research indicates that the authoritative parenting style leads to greater academic achievement in children [4]. In addition, parenting styles have been reported to influence obesity development. The authoritarian, permissive and uninvolved parenting styles are more likely to cause obesity in children [5]. It can be concluded that the authoritative parenting style is the most effective style to reduce the chance on obesity.

Dog-directed-parenting styles

This knowledge about the relationship between parenting styles for raising children and the development of obesity may be useful for raising dogs. An increasing part of the canine population is overweight and may be, dog-directed parenting styles (DDPS) could prevent getting overweight or obese. In literature only little information can be found concerning different styles of dog ownership. However, recent research of Herwijnen et al (2018) showed three different DDPS when raising dogs. The first style, authoritarian, is based on correcting the dog, for instance with a tap. In the second parenting style, called the authoritative-intrinsic value orientated style, the dogs needs and emotions are the starting point. In the third parenting style, the authoritative-training orientated style, attention is paid to the trainability of the dog. The first DDPS is similar to the original 'child-directed' authoritarian parenting style. The other two DDPS are comparable with the authoritative parenting style [6].

Overweight in dogs

Overweight and obesity in children are a serious medical concern. The last decades, in addition the number of overweight dogs is increasing [7]. In 2005 the prevalence of overweight or obese dogs in the US and Australia was 34,1% and 41,1%, respectively [8], [9]. A higher prevalence (44,4%) was found in China [10]. A recent study in the UK showed an increased prevalence: 65% of the participating dogs were overweight or obese [11].

Many dog owners do not consider obesity and overweight as a health problem [12]. However, severe overweight or obesity may certainly cause health problems such as orthopaedic diseases, diabetes mellitus and cardiorespiratory diseases [13]. It is therefore important to prevent severe overweight in pets.

Many people do not realise that they are overweight. It is a misperception of their body shape [14]–[16]. Something similar can also be seen in dog owners when they have to determine the body

condition score (BCS) of their dog. Many dog owners do not believe their dog is overweight, while in fact it is. It has been shown that dog owners give their own dog a lower BCS than a veterinarian does [17], [18]. As such, it is important that dog owners become alert on symptoms of overweight and obesity.

Obedience and training

Most dog owners want to teach their dog common commands and tricks. Dogs have to be obedient to their owners. Commands, such as coming to the owner when the dog is called, sit down or lie down are common examples which dogs have to learn. Many studies have already been conducted on different training methods, such as applying verbal and nonverbal commands [19] and the application of food rewards [20]. Differences in trainability have been demonstrated between breeds, sex and neuter status [21]. These researches show how to demand obedience and which factors have to be taken into account regarding trainability. However, no research has been found which determines the influence of DDPS on the obedience and trainability of dogs. If it appears that a specific parenting style is associated with a higher degree of obedience and trainability, this information could be useful to improve training programs and facilitate the training of dogs. In the schedule below (figure 1) the expected influences between the different subjects are demonstrated.

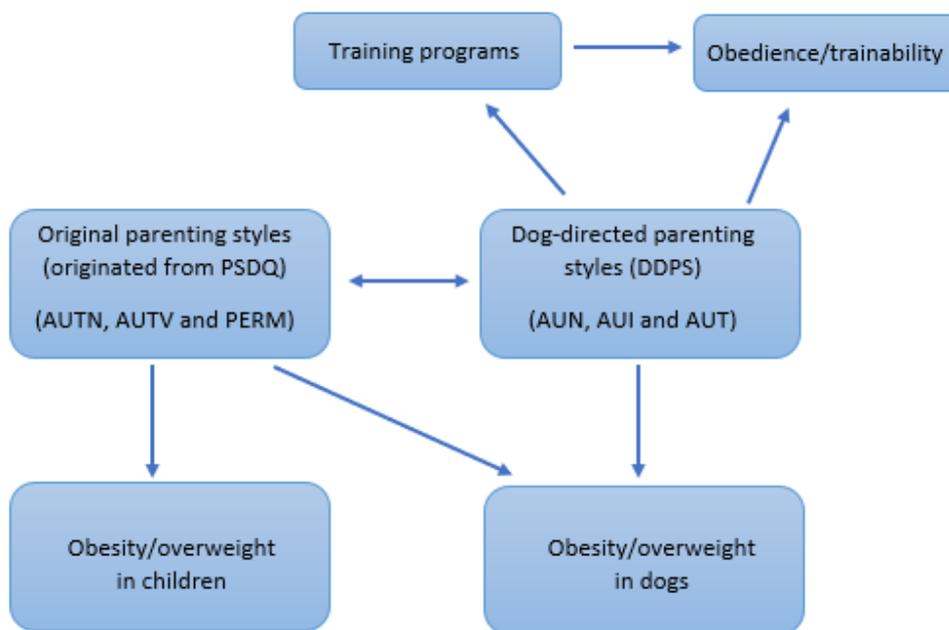


Figure 1. Influences and expected influences on 1)DDPS, original PS and overweight and 2) DDPS, obedience/trainability and training programs. AUTN= authoritarian; AUTV=authoritative; PERM=permissive; AUN=authoritarian; AUI=authoritative-intrinsic value orientated; AUT=authoritative-training orientated

Aim of the study

As the relationship between child-directed parenting styles and obesity risk in children is established[5], it could be possible that a similar link exists for dogs. Therefore, this study examines the relationship between DDPS and overweight in dogs.

Due to the fact that DDPS practically can be linked to training activities, in addition the relationship between these styles and obedience and trainability is examined.



Materials and methods

This research is a descriptive research in which data is collected by means of desk research and questionnaires. These data is analysed, statistical analyses are performed and phenomena and relationships are mentioned.

Data was collected by conducting surveys on the different parenting styles. These surveys were carried out amongst dog owners that visited animal clinics; most of the clinics were located near Utrecht in the Netherlands. In these clinics dog owners were approached for partaking in this study. The questionnaires focus on the original PS and DDPS. In addition, data was collected regarding breed, age and sex of the dog and age, gender and place of residence of the owner. Data was collected by two students in two different periods: early 2018 and October 2018. In total 159 questionnaires were completed. The body condition score was determined using the 9-point BCS scale. First the dog was visually assessed and secondly palpated on ribs, waist and tail-base by the students. The 9-point BCS scale is chosen because there is a high correlation between BCS and the percentage of body fat (%BF) determined by dual-energy X-ray absorptiometry [22], [23]. However, it is much easier and faster to determine the BCS. A BCS of 1 indicates that a dog is extremely thin. A score of 2 or 3 points out the dog is underweight. A score of 4 or 5 indicates that the weight of the dog is ideal. A score of 6 or 7 means the dog is overweight and 8 or 9 is given to obese animals.

To determine the parenting styles of the participants, 34 questions were asked. The questionnaire included 32 items (originated from the Parenting Styles and Demanding Questionnaire (PSDQ), according to Robinson) to score the original PS [3] (see attachment 1). DDPS were scored according to Herwijnen [6]; 18 questions from the PSDQ-32 were used and 2 questions from the PSDQ-62 were added (see attachment 2). This made it possible that both the original PS and the DDPS could be determined. To be able to analyse if relationships exist between the different parenting styles and the obedience and trainability of dogs, an extra set of questions was added. These questions belong to a standardised questionnaire (C-BARQ), which is developed to determine the behaviour and temperament of dogs. As such, the obedience and trainability of the dogs could be determined (see attachment 3).

PSDQ, obedience and trainability items were measured on a five-point Likert scale. The participants had to mention to what extent each item was applicable to themselves. The choices were: never (score 0), nearly never (1), neutral (2), nearly always (3) and always (4). Parenting style scores were calculated according to Robinson et al (2001) [3], by summing scores for items on a same parenting style and expressing the sums as percentages of the theoretical maximum. In the same way, obedience and trainability scores were calculated.

The participants are divided into the groups AUTN, AUTV, PERM or the Mixed group based on their scores for the original PS. The scores were first converted into decile scores. Participants with a score within the 4th decile or higher on the scale 'AUTN', whereby this score was also higher than the score on the scale 'AUTV', were classified in the 'AUTN' group. Participants with a score within the 4th decile or higher on the scale 'AUTV', whereby this score was also higher than or equal to the score on the scale 'AUTN', were classified in the 'AUTV' group. Participants who scored lower than the fourth decile on both 'AUTN' and 'AUTV' and also had a score within the 5th decile or higher on the 'PERM' scale, were classified in this last PERM scale. Participants who had a low score on all scales were classified in the mixed group. The participants belonging to the mixed group do not use a clear parenting style. In the same way, the groups of the DDPS were compiled.

The questionnaires were entered in a database (Microsoft Excell). Statistical analyses were performed with IBM SPSS Statistics 25.



To establish whether there were associations between overweight and a specific PS or DDPS, chi squared tests were performed. To investigate whether there were associations between the different PS or DDPS and the obedience and trainability an Anova was used. In addition, independent t-tests were performed to determine which groups differed significantly from each other.

Results

Descriptive statistics owners

Dog owners who visited the animal hospital participated in this study. The number of respondents was 159. Most subjects were female (72,3%, N=115; male: 27,7%, N=44). The age was categorised into 7 different groups. The different groups were 0-17, 18-24, 25-34, 35-44, 45-54, 55-64 and 65+ years. Most subjects belonged to the group 45-54 (28,9%) and 35-44 (21,4%) years old.

The subjects were categorised into the following groups based on the original PS and DDPS (see Table 1).

Table 1.

styles	Original PS	%	N	DDPS	%	N
authoritarian	AUTN	30,2	48	AUN	15,1	24
authoritative	AUTV	48,4	77	AUI	62,2	99
				AUT	14,5	23
permissive	Perm	8,2	13			
mix	Mix	13,2	21	Mix	8,2	13
Total		100	159		100	159

Only in the second research period, participants were asked about obedience and trainability. As a result 76 dog owners completed this extra set of items.

Descriptive statistics dogs

Dogs were categorised into three different groups according to their age: young (up to 1 year), adult (1-9 years old) and old (9 years or older). 7,5% was young (N=12); 59,7% was adult (N=95); 32,1% was classified as old (N=51). The age of one dog was unknown.

The sex distribution of the dogs showed: entire male 23,3% (N=37), male neutered 32,7% (N=52), entire female 8,8% (N=14) and female neutered 34,6% (N=55). The sex of one dog was not filled in.

The BCS was determined and most of the dogs were classified in the category with BCS 5 (30,8%; N=49) or BCS 6 (31,4%; N=50). The lowest BCS that was found was score 3 and was found in one dog. One dog was classified with BCS 9. Eight dogs were given a score of 8. In addition, the categorisation 'no overweight' or 'overweight' was made; BCS 3-5 were classified as 'no overweight' and BCS 6-9 were classified as overweight. 47.8% (N = 76) of the dogs belonged to the group 'no overweight' and 52.5% (N = 83) of the dogs were classified as 'overweight'.

Associations between PSDQ or DDPS and overweight

Using cross-tabulation and chi-squared tests, it has been analysed whether there are any associations between the original parenting styles and dogs being overweight. It appears that there is a lower percentage of overweight in the mix group than in the other groups. However, these differences are not significant.



In addition, it has been analysed whether there are any associations with the dog-directed parenting styles and dogs being overweight. Although not significant, the DDPS 'AUN' shows to a limited extent association with being overweight: two-thirds of the dogs belonging to an owner who uses this parenting style is overweight. About half of the dogs in the 'AUI' and 'AUT' groups are overweight. Also in this classification it can be seen that the mix group scores the lowest on overweight. In table 1 the results of the chi-squared tests are demonstrated.

Table 1. The (dog-directed) parenting styles analysed with Chi-squared (X^2)-tests.

		Samples (n)	Prevalence overweight (%)	X^2	p
Original Parenting styles	AUTN	48	58,3	3,767	0,288
	AUTV	77	53,2		
	PERM	13	53,8		
	Mixed	21	33,3		
Dog-directed parenting styles	AUN	24	66,7	3,459	0,326
	AUI	99	49,5		
	AUT	23	56,5		
	Mixed	13	38,5		

Associations between DDPS and obedience and trainability

A one-way ANOVA was conducted to compare the score of obedience and trainability between the original PS 'AUTV', 'AUTN', 'PERM' and 'Mixed'. A second one-way ANOVA was conducted to compare the scores of obedience and trainability between the DDPS 'AUI', 'AUT' and 'AUN'. There was a statistically significant difference between groups ($F(3,72) = 4,084, p = 0,010$). Independent t-tests revealed that the score of obedience and trainability was statistically significantly higher for the 'AUI' group ($69,172 \pm 13,656, p = 0,004$) compared to the 'AUN' group ($54,370 \pm 17,195$). Also the score for the 'AUI' group ($69,172 \pm 13,656, p = 0,023$) was statistically significantly higher compared to the 'AUT' group ($58,350 \pm 16,545$). There was no statistically significant difference between the other groups (see table 4).

Table 2. Obedience and trainability comparisons between dog-directed parenting styles, analysed by independent t-tests.

DDPS	Compared to DDPS	p	Mean difference
AUI	AUN	0,004	14,801
AUI	AUT	0,023	10,822
AUI	Mixed	0,083	9,384
Mixed	AUN	0,493	5,418
Mixed	AUT	0,846	1,438
AUT	AUN	0,587	3,980

No statistically significant differences were revealed for the association between the original parenting styles and obedience and trainability.

De mean scores and 95% confidence intervals of the DDPS are demonstrated in figure 2.

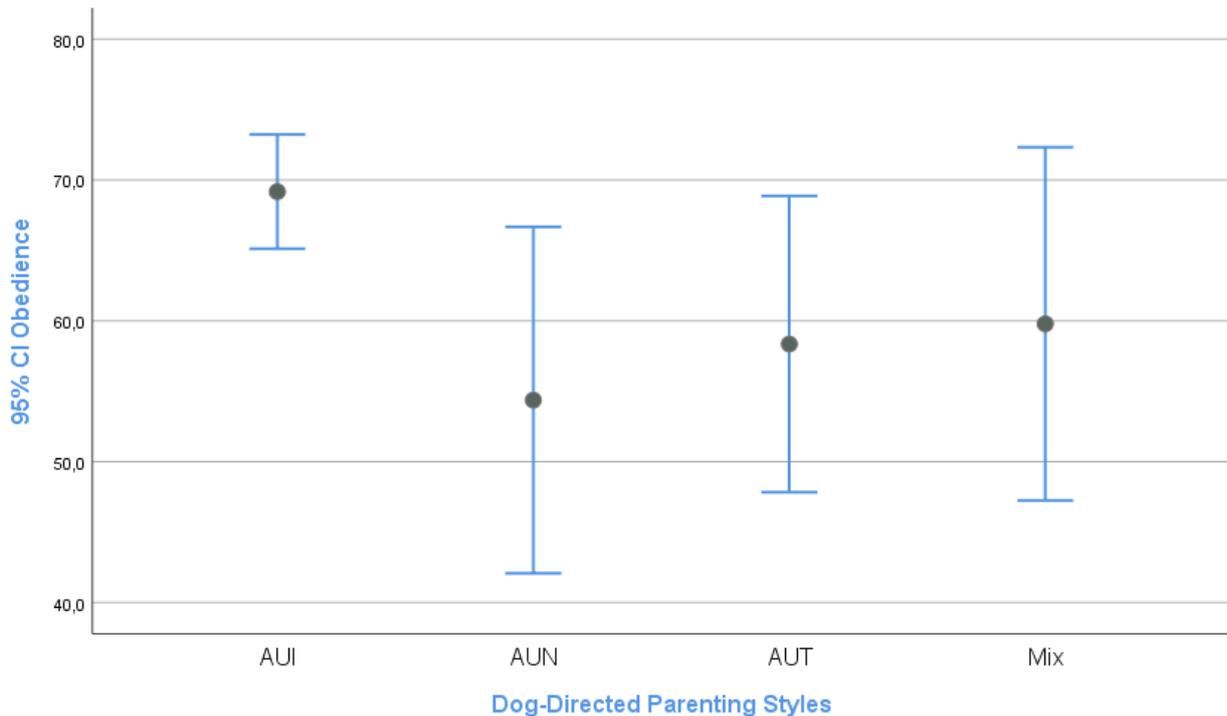


Figure 2. The mean scores of obedience and trainability regarding dog-directed parenting styles are shown. In addition the 95% confidence interval is shown.

Discussion

This study examined associations between (dog-directed) parenting styles and overweight in dogs. Although no significance could be demonstrated in the mentioned statistical tests, it seems that the different parenting styles can have an influence on the degree of overweight in dogs. Regarding the DDPS, it seems that especially the authoritarian style can be an influencing factor that can lead to overweight in dogs. Earlier research has already shown that the authoritarian parenting style involves an increased risk of getting overweight in children [24]–[26]. Other research also mentioned next to the authoritarian style, also the permissive and uninvolved parenting style increasing risks of overweight [5]. Apparently for children the authoritative style is optimal for minimising the risks of overweight. Remarkably, in this study it is not found that for dogs the authoritative style is associated with normal weight. It is possible that in this study no clear associations were measured between dog directed parenting styles and overweight due to the size of the sample. Another reason could be that no direct one to one relationship can be made between PS and DPPS caused by differences between human intelligences and animal instinct.

Moreover, it was also examined whether or not the original parenting styles have an association with overweight.

The uninvolved parenting style is not found in this study, therefore this parenting style is left out of consideration. Remarkably, concerning the original parenting styles, hardly any relationship can be seen between the authoritarian or permissive style and overweight in dogs. This is probably due to the fact that the questionnaires differ in some respects for the different formats (original PS and DDPS). For example, 20 items were used to determine the DDPS and 18 of these correspond to the original PSDQ. In addition, also in this case the small sample sizes could be a cause. For instance, in this study there were only thirteen participants who used the permissive style. However, in view of the results, it seems that if owners use a mix of different parenting styles overweight occurs less frequently. This could possibly mean that the use of different parenting styles reduces the risk of overweight in dogs. No comparison can be made with humans since no studies have been found about this topic.



It is remarkable, however, that only a few studies explain how the categorisation of the participants into the different parenting styles was defined. In this study, we found that many participants do not use an unambiguous parenting style, but a mix of the different styles. Other research showed the same approach of creating mixed groups [27].

Regarding the obedience and trainability it appears that dogs, with owners using the AUI style, scored significant higher than dogs raised with the AUN or AUT style.

Strengths of this study:

Due to the increasing number of dogs with obesity, it is necessary to understand more about the causes and mechanism. Influencing factors are unclear and a lot of questions can be asked about this topic. However, research on this topic is extremely limited. With this study we have found some interesting associations - although not significant- but worth for further analyses. A strength of this study is that the BCS has been assessed by trained students. This means that determination of the BCS has been shown as objectively as possible. In previous research, the BCS was determined by the owner himself, but this is very subjective, as mentioned before.

Limitations of this study:

While the participants answered the questionnaires, the student was always in the vicinity. This may have resulted in completing the questionnaires not completely truthfully. Previous research has shown that participants give different answers when a researcher is in the neighbourhood [28]. This can be explained by the fact that people do not want to be disapproved of their answers. Another issue was that different participants interpreted some questions in different ways or sometimes read incorrectly. As a result, some questions may have been answered incorrectly.

Although only little differences are shown between the type of parenting style and whether or not the dogs are overweight, in this study no clear relationship has not demonstrated between these variables. Both parenting style and obesity are complex phenomena which may be influenced by other factors. For instance, among other things the type of personality of owners, background and financial state but also economic and health factors all can be influencing factors on the BCS in dogs. Previous research has demonstrated that specific personality traits are linked to underweight or overweight; for instance, low conscientiousness and high impulsiveness are associated with obese and overweight [29].

Another suggestion is that strict owners could have a dog that has an ideal BCS. People who are more strict often have rules and are consistent, which could lead to feeding at fixed times and no sweets in between. To confirm these suggestions, more research is needed. It is also important that a larger population is examined. In addition, it would be useful to question people in a larger area to get a better representation of the population.

Previous research has shown that when using interventions that currently exist, such as certain loose-weight-programs, a large percentage of the participating dogs do not complete the program and return to their old weight within a period of time [30]. This means that these programs do not have the necessarily long-term effect, which is important to reduce the prevalence of overweight in dogs.

When all factors associating with overweight of dogs, are clearly defined and brought together, it is possible to adjust the interventions accordingly.



Conclusion

This study has shown that, differences – although not significant- between type of parenting styles and overweight in dogs can be measured. Due to the complexity of this topic and its relationships, more research is needed to bring more clearance in the exact mechanism. Subsequently, improved measures can be taken to reduce obesity. In addition, it has become clear that AUI has a positive relationship with the obedience and trainability of dogs. With this knowledge, training programs could be improved by focussing on DDPS to train dogs.

Acknowledgements

I would like to thank my supervisor Ineke Herwijnen for her effort and valuable comments to create this thesis. Also I would like to thank the veterinary clinics where was allowed to do my research. Last but not least I would like to thank my mother for her great feedback on my thesis.



Attachments

1. Original parenting styles and dimension questionnaire

Authoritarian

I can explode in anger towards my dog when he does something he knows I don't want him to do.

I grab my dog when he/she is being disobedient.

I raise my voice to make my dog improve.

I scold or criticize when my dog's behaviour doesn't meet my expectations.

I use a corrective slap when my dog misbehaves.

I use a poke of my finger, or short kick to snap my dog out of it when it misbehaves.

I use physical punishment (for instance a slap or a correction chain) as a way to improve my dogs behaviour.

I yell or shout when my dog misbehaves.

When I ask my dog to do something, he should do so, because I said so and I am its boss.

I punish by giving my dog 'time out' and walking away if he misbehaves, even if he finds the situation he is in uncomfortable.

I punish by taking away toys from my dog.

I use threats as punishment without feeling need for justification towards my dog.

Authoritative

I allow my dog to give input on decisions for instance with regard to the route we follow on walks.

I am responsive to my dog's feelings or needs

I encourage my dog to show how it feels, it is allowed to growl for instance, when uncomfortable.

I give comfort when my dog is upset.

I give praise when my dog is good.

I practice behaviour step by step with my dog, so I am sure he understands what I ask of him.

I take into account my dog's preferences in making plans.

I take my dog's desires into account before asking him to do something.

I think about why rules should be obeyed by my dog.

I use more or higher value reward (food or toy) when I believe my dog should really do something in a situation

I have good times together with my dog.

I help my dog to understand the impact of its behaviour by offering him choices in situations.

I let my dog know how I feel about its good and bad behaviour.

I encourage my dog to 'be dog' even when it results in a dirty or wet dog.

I show respect for my dog's needs by encouraging my dog to 'be dog'.

Permissive

I give into my dog when he causes a commotion about something or doesn't do something I want it to.

I threaten with punishments towards my dog and do not actually do them.

I threaten my dog with punishment more often than actually giving it.

I spoil my dog

I find it difficult to discipline my dog.



2. Dog-directed parenting styles and dimensions questionnaire

Authoritarian-correction orientated

I can explode in anger towards my dog when he does something he knows I don't want him to do.

I grab my dog when he/she is being disobedient.

I raise my voice to make my dog improve.

I scold or criticize when my dog's behaviour doesn't meet my expectations.

I use a corrective slap when my dog misbehaves.

I use a poke of my finger, or short kick to snap my dog out of it when it misbehaves.

I use physical punishment (for instance a slap or a correction chain) as a way to improve my dogs behaviour.

I yell or shout when my dog misbehaves.

Authoritative-training orientated

I channel my dog's misbehaviour into a more acceptable activity. (Originally from PSDQ-62)

I give praise when my dog is good.

I practice behaviour step by step with my dog, so I am sure he understands what I ask of him.

I practice certain behaviour with my dog before asking this behaviour in a more difficult situation. (Originally from PSDQ-62)

I think about why rules should be obeyed by my dog.

I use more or higher value reward (food or toy) when I believe my dog should really do something in a situation

Authoritative-intrinsic value orientated

I allow my dog to give input on decisions for instance with regard to the route we follow on walks.

I am responsive to my dog's feelings or needs

I encourage my dog to show how it feels, it is allowed to growl for instance, when uncomfortable.

I give comfort when my dog is upset.

I take into account my dog's preferences in making plans.

I take my dog's desires into account before asking him to do something.

3. Obedience and training items

1. When off the leash, returns immediately when called.
2. Obeys the "sit" command immediately
3. Obeys the "stay" command immediately..
4. Seems to attend/listen closely to everything you say or do .
5. Slow to respond to correction or punishment; "thick-skinned".
6. Slow to learn new tricks or tasks.
7. Easily distracted by interesting sights, sounds, or smells.
8. Will "fetch" or attempt to fetch sticks, balls, or objects.



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