

Attachment to Pets Revisited

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Abstract – It has long been perceived wisdom that single people are those least likely to own a pet. The 2010 *Emploi du temps* (Time Use) survey confirms this pattern, while also making it possible to examine the activities and time shared with pets. It also allows an analysis of the terms people use to describe the activities carried out with their pets. We show that single people who own a pet spend more time with it, especially playing together with it. We also show that women and the elderly use language from a register that could be described as “anthropomorphic” to describe the way their pets fit into their daily lives more than other groups. It explains why single people use “anthropomorphic” language more than others, since they are more likely to be women and elderly people.

JEL: J22, N30

Keywords: time use, leisure activities, pets, household status, textual analysis

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The authors would like to thank Dominique Goux and Pauline Givord for their time and valuable advice on the authors' work, the participants at the 8th congress of the Association Française de Sociologie, the French Sociology Association, (Aix-en-Provence, 2019), and the two anonymous reviewers for their thought-provoking and encouraging comments.

Received in July 2023, accepted in February 2024. Translated from : “L'attachement aux animaux de compagnie revisité”.

The opinions and analyses presented in this article are those of the author(s) and do not necessarily reflect their institutions' or INSEE's views.

Citation: Brousse, C. & Bodier, M. (2024). Attachment to Pets Revisited. *Economie et Statistique / Economics and Statistics*, 543, 75–92.
doi: 10.24187/ecostat.2024.543.2120

In 2010, according to the most recent *Emploi du temps* (Time Use) survey, 49% of French households owned a pet or livestock animal. If we limit the scope to households in employment and residing in towns and cities, for which the oldest data are available, this proportion is thought to have increased by 5 percentage points since 1966, despite the increasing urbanisation of lifestyles and the increasing economic difficulties that could lead some to shy away from the cost of owning an animal.

So, the question is, do the French have an attachment to the presence of an animal in their lives? In order to reflect this attachment, “sociologists have focused on the symbolic relationship with animals and the largely subconscious expectations that owners have towards them” (Herpin & Verger, 2016). In Yonnet’s opinion (1983), it is a means of maintaining authority when one no longer has authority over children, while for Hérin (1988), “the animal provides a way for owners to, in a playful manner, ‘repeat’ relationships of dominance or, conversely, to ‘distance’ themselves from them symbolically”.

In their successive articles, Herpin and Verger use the approach to the sociology of consumption developed by Gary Becker (1973; 1974): the acquisition of a pet thus appears to be “the result of a decision that is not fundamentally different from decisions made by the household with regard to consumer products” (Herpin & Verger, 1991; 1992; 2016). These studies allow us to determine the reasons why households acquire animals with a reasonable degree of accuracy. However, they are limited by the fact that the “quantitative” surveys of the official statistics system on which they are based do not provide “information on the emotional aspect of the relationship between the animal and its owners”.

Furthermore, these authors wonder if “a pet is [...] a way to relieve loneliness” (Herpin & Verger, 2016). The only indicator they can use to examine this issue is the rate of animal possession, which they compare according to family structure. Analysis of this individual indicator quickly leads to the conclusion that a pet is not a way to relieve loneliness, given that single people are less likely to have one. They also compare the rate of animal possession at different points in the life cycle, and find that the presence of animals is greater in the middle of the life cycle, when there are children: once again, animals appear to be the opposite of a way of relieving loneliness.

The authors conclude, however, that their article “does not address the emotional place that owning a pet has in the lives of owners of dogs, cats or horses”. In fact, reducing a bond with an animal to the simple act of living in a household that owns one likely does not fully examine the subject, especially given the fact that, if single people are less likely to have animals, it may be because there are material obstacles (especially as regards the ability to have it walked or taken care of when they are not home), meaning that it is not necessarily by choice, but due to constraints.

To examine the bond with an animal, social psychology starts from an approach that is the exact opposite of that used to analyse the results of large statistical surveys. It starts with a scale to measure attachment to the animal (which is often ad hoc, meaning that there are many). A small sample of volunteers (e.g. a veterinarian’s customers or students) who have an animal is then asked where they would place their attachment on that scale. The results, which are robust across studies, conclude that single people have a greater attachment to their animals, as well as with women and people living in urban areas (Archer, 1997; Epley *et al.*, 2008).

However, those studies suffer from several limitations (literature reviews, such as Gilbey & Tani (2015) or Scoresby *et al.* (2021), underline the need for broader studies).

First, they are able to establish correlations, but cannot address the issue of causality, since they are not usually based on following the sample over time. Second, there is concern that the social psychology results may be obtained from unrepresentative samples, because people with a strong attachment to their animals are probably more likely to participate in such studies. Moreover, the use of an attachment scale leads to respondents inferring that having an attachment to their dog or cat is a legitimate form of relationship. Finally, in the same way that there is always a publication bias in favour of conclusive results, there could be a bias in the publication of social psychology articles when the initial hypothesis, that of an attachment, is verified.

Sociology and statistics are social sciences, while social psychology is a behavioural science. Typically, the degree of overlap between their theoretical frameworks is marginal. However, according to Claidière & Guillo (2016), social sciences reduce behavioural sciences to “caricatural culturalism”, while behavioural sciences criticise the “scientific reductionism” of

social sciences. Interactionist sociology would therefore be a way to bring the two disciplines together.

In *Des chiens et des humains* (Dogs and Humans), Guillo (2009) asks whether the dog is an “emotional substitute” for a lack of human connection, associated with needs that have emerged along with industrial society. With the arrival of industrial society, lifestyles have become more frequently urban, with all the consequences that this entails in terms of anonymity and the breakdown of social interaction, together with the narrowing of family ties to focus on couples and their children and the increase in people remaining single or in single-parent families. If dogs (or other pets, Guillo adds) were an “emotional substitute”, they should be found more often with people who lack social connections. Finding that pets are more often found in households with children, as well as more often found with couples, and therefore more often found with people whose “expectations are met in terms of human social interaction”, and less often with single people, Guillo concludes that pets cannot be an emotional substitute. However, he draws this conclusion by examining no other indicator than ownership rates alone. We therefore encounter the problem, as already highlighted, of the lack of relevant indicators to examine this question of whether a pet is an “emotional substitute”.

Another corpus of American studies, which claims to adhere to interactionist sociology, supports the need to recognise a form of agency in animals (i.e. a status as subjects or actors, rather than objects at the disposal of humans). Those studies focus on real interactions observed in places such as veterinary clinics or trade fairs, or even those reported in interviews or in personal blogs on websites. Clinton Sanders, a pioneer of this trend, studied his interactions with his own dog over four years (Sanders, 1993). Arluke (1988; 1990) and Sanders (1993) studied how owners address veterinarians, making their pet talk and claiming to be the “mum” or “dad” of the dog.

That research therefore has more of a qualitative focus. It delves further into examining the nature of bonds with animals, but by studying people who demonstrate their investment in an animal through their mere presence at the place of observation: they cannot be assigned a more general scope than that of social psychology.

The available literature on attachment to animals therefore consists, on the one hand, of studies

conducted among the general population, which essentially find that single people have fewer pets than others, and, on the other hand, of qualitative studies, which highlight attachment phenomena without quantifying them and without being able to confirm that they are universal. These two sections of the literature lead to opposing conclusions in relation to the hypothesis that the animal is an “emotional substitute”.

To reframe this within the narrower limits in which we are operating, the theory whereby attachment to an animal is greater when people live alone is not held uniformly. This is why it is important to have new tools making it possible to answer the following question: does attachment to an animal vary depending on whether or not the person lives alone?

What we propose here is an original approach based on a very well-known and rich statistical source, but one which has never been used to answer this question: the *Emploi du temps* survey (Box 1). It was first conducted in 1966 and the most recent edition, which we mainly use, is from 2010. In their successive publications on pet ownership, Herpin & Verger (1991; 1992; 2016) used other sources (the 1966–1967 *Loisirs* [Leisure] survey, the 1983 *Contacts* survey, the 1988 *Trois aspects du mode de vie* [Three Aspects of Lifestyle] survey and the 2010 *Budget de Famille* [Family Budget] survey). However, since 1966, the *Emploi du temps* surveys have been asking households about the animals they own (except in 1998) and, since 1998, the transcript of the descriptions of their days that respondents provide has also provided information on the relationship with animals.

Later on in this article, the *Emploi du temps* survey will allow us not only to replicate the results obtained by Herpin & Verger, but also to study the activities carried out and the time spent with animals, which, to the best of our knowledge, has never been done before. We will use an analysis of the terms used by respondents to describe how they use their time, including the words used when they talk about animals, to provide new answers to the question: does attachment to an animal vary depending on whether the person lives alone?

1. Single People Less Often Have a Pet

The 2010 *Emploi du temps* survey confirms the results obtained by Herpin & Verger based on the 2010 *Budget de Famille* survey (Herpin & Verger, 2016). In 2010, 48% of households

Box 1 – The 2010 *Emploi du Temps* Survey

The purpose of *Emploi du temps* surveys (Time Use Surveys) is to quantify the duration of daily activities as accurately as possible. They estimate the time spent on each activity undertaken throughout a particular day. The information is collected on the same day. Requiring very little memory, this collection method is more precise than retrospective questioning (Brousse, 2015).

The 2010 *Emploi du temps* survey interviewed 10,675 households, representative of France excluding Mayotte. 15,836 individuals aged 18 or older responded, each describing one or two of their days in a diary, generating a total of 27,903 diaries. The day's activities are described in 10-minute periods: for each 10-minute period, the respondent can describe their main activity and, if necessary, another activity performed at the same time: there are thus one or two activity descriptions for each 10-minute period of the day described. Among those aged 18 or over, there are 726,601 (main or secondary) activity descriptions, of which 8,362 directly relate to animals of any kind (pets, farm animals, game, etc.).

owned at least one pet.¹ That pet may be a dog (a quarter of households, half of which have no pets other than one or more dogs), a cat (about a quarter of households as well, half of which have no pets other than one or more cats), a guinea pig, a goldfish, a bird, or even a horse or an unusual pet, such as a stone marten or a snake. An animal is classed as a pet if the surveyed person describes it in that manner: animals are therefore not pets inherently, but it depends on the circumstances and, in principle, any animal can be a pet. In France, it is rarer for animals that are also farmed, such as rabbits, or those that are also wild, such as snakes, to be classed as pets. The fact that the survey questionnaire separates questions on farm animals and pets is implicitly based on Digard's (1998) distinction between production animals and pets, with the former being deemed "useful" and the latter being deemed "useless".

Whether or not a person owns a pet, regardless of whether that pet is a dog or a cat, primarily depends on where they are in their life cycle. The presence of an animal is more common in mid-life, as well as among those with intermediate standards of living. Couples have pets more often than single people, and all people have pets more often if they have children. These results are confirmed by an econometric analysis all other things being equal.²

The mere fact of owning an animal is a useful indicator, but it is not suitable for studying emotional bonds with an animal.

2. Study of Time Spent on Activities with Pets

2.1. The *Emploi du Temps* Surveys Allow the Study of Time Spent with Pets

A bond with an animal is first materialised by the household's decision of whether or not to

acquire one. The quality or strength of that bond will also be reflected in the amount of time spent with the animal. The time spent taking care of an animal is unavoidable (it is necessary to feed it, care for it and walk it, or give it the possibility to get out, in the case of a dog); but the amount of time can vary. There is no reason for time spent playing with an animal to be high if it is only a guard animal; time spent walking³ a dog is a leisure activity in competition with other leisure activities available to the household.

Overall, it is expected that the total amount of time spent with a pet will be linked to the strength of the bond with it. However, while information on time spent with animals is available in the *Emploi du temps* surveys, to the best of our knowledge it has never been used. Information on time spent carrying out activities with animals also has the advantage of being available at individual level rather than at household level. It is therefore this individual information on the amount of time spent with animals that we now use as an indicator of the strength of the bond between individuals and animals.

In the *Emploi du temps* survey, each respondent provides a detailed description of the domestic and professional tasks they perform, their journeys and how they spend their free time. Each

1. The term used to describe pets in France has changed over time (Brousse & Bodier, 2024). The original French version of this article uses the term from the survey ("animal de compagnie", which translates literally as "companion animal"), which makes a distinction between pets and livestock animals, even though the study does not necessarily confirm the fact that the relationship is one of a "companion", based on the meaning of being "in the company of someone".

2. A logistic regression model of household ownership of at least one pet was estimated based on 14 variables: age, socio-professional group, country of birth of the reference person, type of household, number and age of children, income quintile, urban unit division, region, type of dwelling, number of rooms in the dwelling, occupancy status of the dwelling, ownership of a car, ownership of a second residence and use of a domestic helper.

3. We are referring to walks in the sense of a private leisure activity, and not professional dog walking, for example.

activity described is then classified as part of a classification which, in the 2010 survey, includes 140 items. Two items concern pet care, and are classified as “domestic work”: “looking after pets” and “walking the dog, taking out a pet”.

Those items in the classification have the merit of existing and they are sufficient for describing how time is distributed between major categories; however, they are poorly suited to studying the amount of time spent with an animal and even less well suited to studying the bond that animal owners have with their animal.

First, by providing only two items, the classification de facto limits the scope of activities taken into account: some of the playing, everyday activities (sleep, commuting, etc.) that are carried out “with their animal”, or even simply doing nothing or watching television in the company of an animal (and describing it in this way in the survey) are activities classified (ex post) in the classification as though the animal did not exist, even when it is mentioned. There are no clear instructions, but it seems that there are even differences in how the activity is classified depending on whether the animal is a dog or a cat: playing with a dog can be classed as “caring for a pet”, but with a cat, it is classed as part of “doing nothing, strolling, thinking, smoking, relaxing, resting, etc.”.

For our study, we used a variant of this classification, one that explicitly identifies recreational activities carried out in the company of an animal (Brousse & Bodier, 2024). This variant redefines what is included in “animal activities”: the scope of “animal” activities is broader than that provided for in the initial classification and it includes activities that had been classified

elsewhere. It also shifts the boundaries between items by creating more granular categories (Table 1).

In this redefined classification, by convention,⁴ taking out an animal (mainly a dog) is considered to be a mandatory “care” activity for the first twenty minutes and a (leisure) walk for any further time.

There is another consequence of the fact that the standard classification of the survey was not designed to identify all animal-related activities: the automatic classification tool (Sicore) gives preference to information derived from terms other than those that refer to animals. For example, “I prepare my dog’s meal” is considered a cooking activity. This is not an error; but if the objective becomes the identification of all activities related to animals, then the preparation of their meal is “care” that is given to them. By going back to the analysis of the descriptions as written by the respondents,⁵ and taking into account the mention of an animal in the description, our re-classification instead systematically gives preference to references to animals.

In this re-classification, we finally took into account secondary information provided by respondents, which is usually not taken into account to classify activities (Lemel, 1982). When describing how they use their time in 10-minute slots, as provided for in the survey,

4. This convention is justified by the nature of the distinction sought, but also by the fact that the distribution of the amounts of time spent on the activity “walking the dog, taking out a pet” (item 385 of the standard classification) shows a mode of 20 minutes (a quarter of the walks last for 20 minutes).

5. Access to the descriptions is a specific feature of the French *Emploi du temps* survey, which we are taking advantage of both here and again later in this study.

Table 1 – Redefined classification of activities performed with pets

Type of activity		Link to the survey classification	Examples
Looking after	Caring for a pet	Similar to category 384, which it expands on and complements	Feeding the dog, caring for the cat, cleaning the cat box, visiting the veterinarian, training, telling off, etc.
	Brief outings (maximum of 20 minutes)	Similar to category 385, which it divides in two and complements	Taking the dog out, etc.
Leisure activities	Walking a pet (over 20 minutes)		Walking with the dog, going for a walk with the dog and children
	Recreational activities exclusively with a pet	Categories created by identifying all the descriptions initially classified in categories that are not related to animals, but in which an animal is mentioned	Playing with the dog, petting the cat, watching the puppies, talking to the parrot, taking photos of the cat, etc.
	Recreational activities performed with a pet alongside another activity		Watching TV while stroking the cat, going to get bread with the dog, having a lie in with the cat, etc.

respondents must indicate their main activity during those 10 minutes, and they may optionally add a secondary activity. In practice, for 27% of the main activities, a secondary activity is also mentioned.⁶ In addition, one animal-related activity in ten is reported as a secondary activity: in this study, they are processed in the same way as main activities.⁷

2.2. Every Day, 22% of People Living with a Pet Dedicate Time to it

In 2010, 52% of people aged 18 or over lived in a household that had at least one pet. Those people are likely to spend time with household animals to take care of them and take them out, to walk with them and to play or have company.⁸

The amount of time that those people dedicate to their pets each day averages thirteen minutes per person (Table 2).⁹ However, only 22% of these people actually dedicate time to their pets, and for them the average time dedicated to animals is almost an hour a day.

The time spent with a pet increases with age, at least up until the age of 75. Among working age people, those in employment dedicate less time to their pet. For families, the time dedicated to the pet by any of the adults is lower the more children there are and the more they are young in age. The amount of time dedicated to pets is higher for single people (Figure I): 65% higher than for people living in couples without children, twice as high compared with those living in single-parent families, and more than five times higher than for spouses in couples with children. These findings are confirmed on the basis of all other things being equal (Table 3).

This comparison is performed between individuals, not between households. In order to

compare the time dedicated to an animal by the household to which it belongs, it must be possible to take the composition of the household into account (Figure I). Thus, a household made up of two spouses dedicates to its animal at least the exact amount of time reported by one of the spouses (in the event that such time is always shared) and, at most, twice the time reported by that spouse (in the event that such time is never shared).¹⁰ In fact, the time dedicated by single people to their animal is not double the time dedicated by couples without children: this is potentially partly a reflection of the fact that they cannot share tasks with another person.

To go into greater depth in the analysis, we will now break down the time spent with animals

6. For "animal" activities alone, this decision is made in only one case in ten.

7. Nevertheless, the *Emploi du temps* surveys have their limitations. One is that they do not make it possible to assess the time spent on activities that are difficult to disclose to an interviewer (sexuality, conflicts and socially undesirable or even reprehensible acts). They depict a sanitised and violence-free universe, which is not without consequence when we are interested in the relationships between humans and animals. In the 2010 *Emploi du temps* survey, only one respondent confessed to hitting his cat, who was attacking his pen.

8. Animals are referred to in the plural here for reasons of simplicity, but this applies equally in cases in which there is only one animal.

9. Using the two items relating to pets in the standard survey classification, the time spent on an animal activity by owners of at least one pet is 10 minutes per day. On average, every day, 19% of those aged 18 or older "perform" an animal activity. These "performers" spend an average of 51 minutes doing so. In addition, the new classification and re-classification increase the time dedicated to pets for single-parents and single people more than for other people. There is therefore a bias that is being corrected, which is not inconsequential for our subject since if we did not take it into account, we would be underestimating the time they spend with their animal more than for any other type of person.

10. In 1987, based on data from 1983, Hérin demonstrated that the average number of animals per household did not increase as fast as household size (Hérin, 1987). However, there is no more recent data allowing us to verify that this is still the case; at most, we can see that it is much less common for single people to have at least two different types of pets than for other people, but this does not rule out cases of them having two cats, two dogs or two animals of another type. Furthermore, it should be borne in mind that when a household has multiple animals, there are economies of scale in relation to the time spent caring for them (you can feed several animals or walk several dogs at the same time, etc.).

Table 2 – Time dedicated to pets in 2010

	Duration (in minutes)	Performance rate (as a %)	Duration per performer (in minutes)
Activities to look after pets	8	21	39
Care	5	12	38
Going out	3	11	31
Leisure activities performed with pets	5	9	49
Leisure walks	3	7	45
Other recreational activities	1	2	54
Total	13	22	58

Reading note: People who own a pet dedicate an average of 13 minutes a day to it; 22% of people who own a pet dedicate time to it (58 minutes on average).

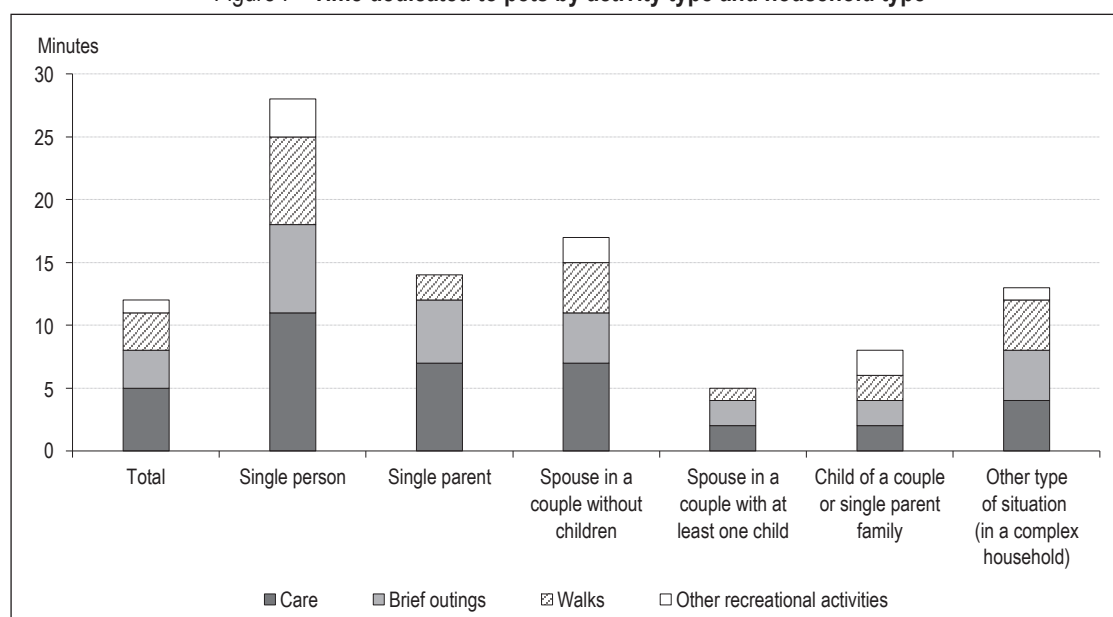
Sources and coverage: INSEE, 2010 *Emploi du temps* survey, France excluding Mayotte, people aged 18 or over living in a household with at least one pet.

Table 3 – Individual characteristics and duration of activities related to pets

	Dependent variable: duration of activities related to pets
Constant	-3.4* (1.9)
Age and employment status	
18 to 24	-1.4 (1.9)
25 to 49 - in employment	Ref.
25 to 49 - unemployed or non-working	2.0 (2.3)
50 to 64 - in employment	3.7*** (1.4)
50 to 64 - unemployed or non-working	8.2*** (1.8)
65 to 74	12.8*** (2.4)
75 or older	10.9*** (2.6)
Gender	
Women	Ref.
Men	0.2 (0.9)
Status in the household	
Single person	13.2*** (2.1)
Single parent	6.1** (2.6)
Spouse in a couple without children	3.8*** (1.5)
Spouse in a couple with at least one child	Ref.
Child of a couple or single-parent family (aged 18 or older)	2.9 (2.1)
Person belonging to a complex household	1.9 (2.1)

Notes: *Estimated coefficient significant at the 10% level; **estimated coefficient significant at the 5% level; ***estimated coefficient significant at the 1% level. Model: linear regression estimated by ordinary least squares with cluster-robust standard errors making it possible to take into account the non-independence between two diaries when they are completed by the same person. N = 13,451. Stewart (2013) has shown that multiple linear models are preferable for data from the *Emploi du temps* survey, even though the durations cannot be negative. The other variables taken into account in the model are the social group (7 options), the size of the urban area (6 options), the type of home (taking into account the presence of a garden, 9 options), the number of rooms in the dwelling (6 options), the geographical area of birth (6 options), limitations in daily life (4 options), the type of animal owned by the household (7 options), the day of the week (3 options: Saturday, Sunday or other), whether or not it is a day off work, the season (4 options), the weather (5 options), the number of diaries completed (2 options: 1 or 2) and the presence of a "Stiglitz column" (which reduces the space available to describe the activities). Sources and coverage: INSEE, 2010 *Emploi du temps* survey, France excluding Mayotte, people aged 18 or over living in a household with at least one pet.

Figure I – Time dedicated to pets by activity type and household type



Reading note: Single people who own a pet dedicate an average of 28 minutes per day to it. Of those 28 minutes, 11 are for care. Sources and coverage: INSEE, 2010 *Emploi du temps* survey, France excluding Mayotte, people aged 18 or over living in a household with at least one pet.

according to type of activity, making a distinction between activities to look after the animal (care and short walks) and leisure activities (long walks and recreational activities). Each day, 21% of owners perform activities related to looking after their animal (cf. Table 2), whether it be care (feeding, caring, cleaning their habitat, etc.) or taking them out briefly (for less than 20 minutes). In total, these activities last an average of 39 minutes. 9% of owners perform a leisure activity with their pet. Generally, this refers to walks, which take an average of three quarters of an hour during the day. However, a small fraction (2%) also reports, on average, 54 minutes of other leisure activities with their pet: a game, or simply the presence of an animal during a daily activity (relaxing, watching TV, etc.).

Single people dedicate more time to looking after their pet that is deemed “mandatory” (care and brief outings). In addition, the time spent on long walks or recreational activities is longer for single people (more than twice as long as for single parents and spouses in a couple with at least one child, and almost twice as long as for the spouses in a couple without children). Dedicating more time to these activities that are “intentionally shared” with the animal can be a sign of greater attachment. Overall, the study of the duration of activities performed with animals therefore gives rise to a conclusion that cannot be squared away: while single people less often have an animal, it is probably due to the constraints it creates; but when they do have an animal, they also spend more “intentionally shared” time with it.

3. Textual Analysis of the Vocabulary Used to Describe Activities Related to Pets

3.1. Vocabulary as a Demonstration of Bonds with the Animal

It is well-known that specific language is used to address animals (Hirsh-Pasek & Treiman, 1982). Mondémé (2018) has also shown that this language has common features with the language used to address children. By seeking “to identify, with the help of precise empirical work, the actual methods by which we call, address, or even hold strictly *conversational* modes of communication with pets”, she showed that those modes “sometimes resemble the methods (relating to prosody, intonation, and sequence) used when speaking to very young children, but are sometimes entirely new” (Mondémé, 2018, p. 77).

Moreover, Morand & de Singly (2019) have shown that people who have the greatest “conversational proximity” to their animal (dog or cat), i.e. those who talk to and confide in them, are also the people who give their pet a nickname more often and the ones who “talk to others about it most often”. It is therefore thought that there is a link between the different types of speech around pets (those who speak to them and those who talk about them). We do not have a body of texts from pet owners addressing their animals, but in the 2010 *Emploi du temps* survey, we have the exact terms they use to describe activities with their pets: this is the information collected in the diaries completed by the respondents to describe how they use their time, to which we returned to amend the classification of activities performed in the company of animals. By examining those descriptions, we can see that, for the same activity, the terms used are very different from one respondent to another, even though one might think that the space restrictions and binding framework that requires them to describe an entire day (often even two) in detail could lead to a strong degree of standardisation.

This is not the case, as the phrases reported differ greatly, e.g.: “Animal”, “I chat with [first name] the parrot”, “I cuddle the cat”, “Woken up by the cat going out and fell back to sleep quickly”, “Walk with my dog and my two daughters”, “Visit to the canine specialist” and “Cleaning the aquarium”.

There may be several causes for this diversity. First, the space provided to describe a 10-minute activity is not consistent across all diaries. The so-called “Stiglitz” diaries¹¹ have less space: this is the case for just under 10% of the diaries (Ponthieux, 2015) and must be taken into account in the analysis.

Second, as people we all express ourselves differently based on our social position, our level of education and our social background. Héran (1988) analyses activities performed with animals as cultural practices and shows that there are differences according to cultural capital: labourers and basic tertiary employees exhibit more authority, so it is to be expected that the vocabulary they use is reflective of that.

Finally, there is individual variability, which is in evidence for all activities reported. In the case

11. The “Stiglitz diaries” include an additional column so that respondents can rate their assessment of the pleasant or unpleasant nature of the activity (to meet the recommendations of Stiglitz et al., 2009). The space provided for respondents to describe their activities is reduced by the width of this column.

of activities involving an animal, reading the diaries gives the impression that this diversity is potentially indicative of the relationship that the person has with their animal. For example, the following phrases from the 2010 survey all refer to feeding animals: “Feeding the animals”, “I make lunch for the dogs”, “I eat with my wife and dogs”, “I prepare the cat’s snack”, “Preparing the meal for us and the dogs” and “I prepare noodles for my dog”. The terms chosen are quite different (“feeding”, “lunch”, “meal” and “snack”), but they could be used for family meals and are more or less specific to the language used with other humans (in this sense, “meal” seems more “neutral” than “snack”, i.e. less specifically human – at least on the surface). The grammatical choices are also different: “for the dogs”, which sets the dogs apart, is a different choice from “for us and the dogs”, which places the family and the animal on the same level; “making lunch for the dogs” separates the lunch of the animal from that of the family, while “I eat with my wife and my dogs” places the animal on the same level as the family.

We therefore get the impression that something is being played out in the choice of terms used, as well as in the choice of prepositions used (“with” or “for”), and in the way in which the animal receives grammatical treatment on an equal footing with their human entourage, or not. Some of these ways of expressing oneself to talk about animals are also more similar than others to the way we talk about children.

In order to go beyond this impression, we use textual analysis. Broadly speaking, this method compares the frequency with which terms are used to describe activities performed with animals to the frequency of terms used to describe other activities performed with the family and without animals (caring for children and adults, preparation and service of meals, walks, social interactions and games). When a term is widely used to describe activities performed without animals, but is rarely used to describe activities performed with animals, we infer that its use to describe an activity performed with animals denotes language that equates the animal to a member of the household; or, in any case, it denotes a bond with the animal that makes a less clear distinction between it and members of the household than when using a term that belongs exclusively to the vocabulary used to describe activities performed with animals. At the risk of an abuse of language that would at least have the virtue of clarity, it could be said that this is a way of identifying terms that denote an “anthropomorphic” vision of the pet.

Using such a definition, there are bound to be cases that will be considered “anthropomorphic”. We are not seeking to define anthropomorphism “in itself”, but as part of a comparison. What is unpredictable, however, is the scale of the results.

In the 2010 *Emploi du temps* survey, we have 726,601 (primary or secondary) activity descriptions provided by people aged 18 or older, 8,362 of which are directly related to animals. Compared to the corpora usually used in the social psychology or interactionist sociology literature that focuses on animal discourse, our corpus has the advantage of being very large and constructed from a representative sample of pet owners. In contrast, it does have the limitation that the analysed texts are short (no more than two handwritten lines). In particular, care should be taken with regard to interpretations to ensure that there are grammatical signs.

3.2. Signs Indicating the Extent to which the Animal is “Anthropomorphised”

From all the descriptions provided in the 1998 and 2010 surveys, we first extract an initial “animal” corpus, which includes the terms used to describe activities performed with animals by each person who described an activity involving a pet (Box 2). We then add to this “animal” corpus the terms that describe activities performed without animals, for activities that can be seen as the human counterpart of activities performed with animals: “Looking after children”, “Educating children” (which includes playing with them), “Caring for adults”, “Meal at home”, “Cooking: preparing and cooking food, peeling vegetables”, “Setting the table, serving the meal”, “Walking” and “Social interaction”. In the end, we obtain a corpus consisting of the expressions used to describe all these categories of activity and also of the expressions used to describe the activities performed with an animal.

The analysis was carried out using Iramuteq text analysis software. This software allows users to classify words or groups of words (nouns, adjectives or verbs) based on how typical they are to a category of the corpus: the more typical a term is to the category, the higher its “specificity” (to that category) (Box 3). Conversely, the more atypical they are to the category, the lower their “specificity” (to that category), which is highly negative. Knowing the law of distribution of specificities, we identify the most specific words or groups of words in the corpus, using a level of 1%, 1% or 10%, as well as those that are least specific.

Box 2 – Creation of The Corpus of Texts for Text Analysis Using Iramuteq

The goal of our text analysis is to identify the words or groups of words that are at the same time typically used to describe activities performed without animals and those typically used to describe activities performed with animals. The wider the corpus used to identify these words, the more precise the analysis will be, as there will be fewer rare or isolated terms. We therefore use the two *Emploi du temps* surveys in which the activity descriptions are available, the surveys for 1998 and 2010. For this part of the analysis (and only this part), the fact that we cannot identify animal owners in 1998 is not important, since the coverage is the activities for which an animal is mentioned.

Our corpus consists of descriptions of activities classified in the following activity categories: care for children and adults, preparation and service of meals, walks, games and social interaction, as well as descriptions of activities related to pets, giving a total of 246,493 activity descriptions, including primary and secondary activities (i.e. texts).

This corpus was then prepared in accordance with the following protocol. First, we simplify the few descriptions that cover multiple activities. For example, with the activity description “I wake up, biscuits for the cat”, we delete the “I wake up” part, which does not directly concern the animal. We then need to remove ambiguity to avoid confusion, such as between “groom” and “grooming”^(a). We remove function words (only verbs, nouns and adjectives are considered in the analysis), we correct spelling errors and we standardise text (nouns and adjectives switched to male and singular, verbs switched to the infinitive). We also identify “quasi-segments”, i.e. expressions to be viewed as a single term (“give food”, “take it out”, “prepare the meal” and “make it do”). The terms that denote family members (“father”, “son”, “husband”, “daughter”, “son-in-law”, etc.) are grouped together in four categories (“parent”, “partner”, “child” or “friend”); other people in the respondent’s entourage are grouped together. Human and non-human first names are grouped together under a single lemma for first names.

These choices are not necessarily neutral (for example, those regarding the lemma), but where they were not, we proceeded on a case-by-case basis, to verify that each choice made did not distort the results.

In the same way, we create a corpus of “human” activity descriptions corresponding to the human counterpart of activities performed with animals: caring for children and adults, preparation and service of meals, walks, games and social interaction activities.

In the end, the corpus of 246,593 activity descriptions used in Iramuteq includes 392,294 occurrences (words). There is thus just over one word per activity description: for routine activities, respondents frequently use only one word (“meal”, for example); and this, more than anything else, provides a good illustration of the preparation of the corpus, as detailed above.

The corpus contains 6,685 distinct words (called “forms”^(b)). Among these, there are 3,419 hapax legomena (words appearing only once), corresponding to 51.1% of the “forms” of the corpus, and 0.9% of the words. The hapax legomena are rare words.

If we focus solely on the corpus of activities related to pets, for the years 1998 and 2010 there were 8,568 activity descriptions, including primary and secondary activities (i.e. texts), or 13,902 occurrences (words), representing 699 forms (different words). They include 378 hapax legomena, which represent 54.1% of the “forms” of the corpus and 2.7% of the words.

^(a)A few lemmas are also created to group together certain similar terms (from the same family); a lemma is a term that groups together others that are deemed to be equivalent. However, this remains marginal.

^(b)The distinction between a “form” and a “word” can be easily understood: in “dog dog” there are two words, but only one “form” (one “distinct word”).

The words or groups of words that are farthest (within the meaning of this law of distribution) from activities performed with animals could be described as “anthropomorphic”, at the risk of an abuse of language. Table 4-A lists these words, using three definitions that vary in terms of broadness, depending on the level chosen.

The same work can be done to compile a list of words or groups of words that are least characteristic of activities performed with animals compared to terms used solely for child care (“Looking after children”) (Table 4-B). Following on from Hirsh-Pasek & Treiman (1982), Mondémé (2018) showed that the vocabulary used to address animals had common features with the vocabulary used to address children: we are therefore also testing

this proximity. Again, at the risk of an abuse of language, which stretches the term but makes it possible to better exemplify the impression, we could describe this list (of terms that relate very closely to child care and relate very little to animal care), as “indicative of an animal being equated to a child”.

The results are generally unsurprising. All terms that relate to conversations (conversation, discuss, talk and chat) are highly atypical of relationships with animals (meaning that they are rather “anthropomorphic”). For example, the term “conversation” is far removed from the vocabulary that is usually used for activities performed with animals (having a conversation with an animal is highly atypical), while it is highly typical for social interaction-related activities.

Box 3 – Calculation of Specificities

The Iramuteq software calculates a statistic indicating whether the occurrences of a “form” are over-represented (or under-represented) in one part of a corpus compared to the rest of the corpus.

In order to analyse the specificity of the occurrence of a “form” in one part of a corpus rather than in the rest of it, the relative frequency of the occurrence frequency of the “form” in the part concerned is compared to its occurrence frequency in the rest of the corpus.

We rate:

A : the appearance of the “form”;

V : all the “forms” in the corpus (= vocabulary);

p : the part concerned;

f : the frequency with which the “form” appears in that part;

F : the total frequency with which the “form” appears in the corpus;

t : the size of the part (total number of occurrences in the part);

T : the size of the corpus (the total number of occurrences of the corpus).

In order to make a judgement regarding the result f , it must be compared with similar figures that correspond to all the samples composed of t items that can be taken from the starting population with the size T .

The calculation of the probability of a “form” A appearing f times in a part p with the size t , the “form” appearing F times overall in the whole corpus with size T , is based on the modelling provided for such calculations by Pierre Lafon (1980) and can be expressed formally using the following equation:

$$Prob_{spécif} (card \{A \in V | A \in p\} = f) = \frac{C_F^f \times C_{T-F}^{t-f}}{C_T^t}$$

where $C_n^k = \frac{n!}{k!(n-k)!}$ is the number of samples of k elements among n elements.

The specificity score is the probability of the “form” appearing as many times as it is actually observed in the part concerned (i.e. f_{obs}) or even more frequently, up to the size of the part, following the hypergeometric law described by the equation above, which depends on f , t , F and T . Specifically, this measurement is obtained by adding together the probability values $Prob_{spécif}$ for each possible occurrence frequency, in accordance with the following equation:

$$Prob_{spécif} (card \{A \in V | A \in p\} \geq f_{obs}) = \sum_{f=f_{obs}}^{card \{A \in V | A \in p\}} Prob_{spécif} (card \{A \in V | A \in p\} = f)$$

The macro provided with Iramuteq makes it possible to calculate the specificity score for different values of its parameters.

The specificity is shown by the integer part of the logarithms in base 10 (\log_{10}) of the specificity probability estimates, with the probabilities obtained by the calculations varying exponentially, as the name “hypergeometric” suggests.

By convention, the representation of under-specificity (or under-representation) is distinguished from that of over-specificity (or over-representation) by a minus sign (-) preceding the score. We will then focus on the low probabilities (therefore the high \log_{10} values) that report:

- either fewer occurrences than expected, if the observation is less than the mode of theoretical distribution (i.e. if the number of occurrences of the event in the part concerned is less than the maximum probability estimated using our hypergeometric distribution modelling). This is what we refer to as under-specificity or negative specificity;
- or more occurrences than expected, if the observation is greater than the mode of theoretical distribution. This is what we refer to as over-specificity or positive specificity.

A value of 3.09 (or 2.33 and 1.28) means that there was a 1 in 1,000 chance (or a chance of 1 in 100 and 10 in 100) that the frequency of the “form” would be what it is in the part concerned, with the knowledge of what the frequency is in the rest of the corpus.

If we use the terms used to describe child care as a reference (“equating the animal to a child”), we will view the following words or groups of words as being highly atypical of relationships with animals: bathing, bottle feeding, putting to bed, showering, feeding, playing, lifting, bed, waking up, nap and watching (within the meaning of supervising).

Included are activities such as watching TV, taking a nap or taking a walk, for example.

These results do not necessarily correspond to the preconceptions that one might have which, in retrospect, justifies the decision to use a statistical method, rather than intuition, to determine this list of terms that are highly atypical of activities performed with animals.

Table 4-A – Least typical terms for activities performed with animals, in contrast to a set of activities performed without animals

	Examples used to talk about animals	Occurrence	Specificity
Terms particularly typical of the vocabulary used for activities performed without animals (level 1/1,000)			
CONVERSATION	TV conversation with my dog	1	-9,999.00
DISCUSSING	Discussion with the dog	3	-9,999.00
PREPARING_MEAL	Preparation of the dogs' meal	108	-304.55
TELEVISION	I watch TV with my cats	9	-66.38
PREPARING	I prepare my dog for the day	61	-47.18
PUTTING TO BED	Putting animals to bed	6	-36.52
BOTTLE FEEDING	I get up to give the kittens a bottle	1	-20.79
BATHING	Bathe the dog, drying and brushing	2	-13.55
VEGETABLES	Preparation of fresh vegetables for the week for the rabbit	2	-10.87
TALKING	Talk a little with the dog	18	-8.88
SHOWERING	Shower the dog	3	-8.09
VISITING	Visit by the cat next door	5	-7.15
WAKING UP	The cat wakes us up I am woken up by the cat	19	-5.88
CHATTING	(This term was not used in the corpus for 2010, only in the one for 1998)	1	-4.92
MEAL	I serve the dogs' meal	140	-4.47
LEAVING	Leave to walk the dog	4	-4.06
LIFTING	I lift up the cat	7	-3.60
NAPPING	I take a nap with my dog	3	-3.11
Terms typical of the vocabulary used for activities performed without animals (level 1/100)			
LOOKING AFTER	I look after my dogs	26	-2.84
RETURNING	I tell off the dog that returned	3	-2.53
SERVING	Serving food to cat and dog	1	-2.38
Terms fairly typical of the vocabulary used for activities performed without animals (level 1/10)			
BED	Breakfast in bed with my dogs	2	-2.16
FEEDING	I feed my dogs	5	-1.80
WAKING_UP	I cuddle the cat who wakes me up	1	-1.74
PLAYING	I play with my dog I play with my cats	177	-1.58
DAY	I prepare my dog for the day	4	-1.52
PLACING	I place the dog in the car I place more drink for the dog	19	-1.49
WALKING_AROUND	I walk around the garden with the dog	7	-1.32
TAKING	I take the dog to drop off the mail	11	-1.31

Notes: The examples taken from the corpus use the exact terms used by the respondents. The calculations were performed using the Iramuteq software. The terms are classified according to the increasing "specificity", as calculated by Iramuteq.
Sources and coverage: INSEE, 1998 and 2010 *Emploi du temps* surveys, France excluding Mayotte, people living in a household for which the reference person is aged 18 or over, having reported at least one activity related to an animal, or one activity from among "Looking after the children", "Caring for adults", "Meal at home", "Cooking: preparing and cooking food, peeling vegetables", "Setting the table, serving the meal", "Walking", games and activities related to social interaction.

For example, "playing" is included in the list of "anthropomorphic" terms (at the 10% level) as well as in the list of terms "indicative of an animal being equated to a child" (from the 1/1,000 level onwards). It is therefore a term that is in widespread use to describe everyday life with children, meaning that it seems "anthropomorphic" when used in relation to an animal. This example allows for a better understanding of what our method identifies: it is not a case of identifying terms that can intuitively evoke

the intention to treat the animal as a human, but terms used that happen to be the same as those used to describe or classify an activity that does not involve any animal, regardless of whether or not there is a conscious intention.

Another example is that of the terms "preparing the meal", or "meal", which are included in both the lists of "anthropomorphic" terms and the list of terms "indicative of equating an animal to a child". One might have thought that these were

Table 4-B – Least typical terms for activities performed with animals, in contrast to child care activities

	Examples used to talk about animals	Occurrence	Specificity
Terms particularly typical of the vocabulary used for activities performed without animals (level 1/1,000)			
PUTTING TO BED	Putting animals to bed	6	243.90
BOTTLE FEEDING	I get up to give the kittens a bottle	1	108.17
BATHING	Bathe the dog, drying and brushing	2	92.72
DISCUSSING	Discussion with the dog	3	81.25
WAKING UP	The cat wakes us up I am woken up by the cat	18	74.96
PREPARING	I prepare my dog for the day	49	54.05
LOOKING AFTER	I look after my dogs	21	52.15
SHOWERING	Shower the dog	3	49.17
PLAYING	I play with my dog I play with my cats	153	48.99
GROOMING	I help my wife to groom the dog	24	47.44
GIVING	I get up to give the kittens a bottle I give my dog care and his meal	52	43.96
FIRST NAME (= where a first name is used)	I come back from the sheep pen, playing with my little dog [first name] with her ball	45	42.21
LIFTING	I lift up the cat	7	32.90
NAPPING	I take a nap with my dog	3	22.14
CONVERSATION	TV conversation with my dog	1	19.30
BED	Breakfast in bed with my dogs	2	18.14
MINDING	I receive a visit from a friend who leaves me his cat to mind	1	16.35
COLLECTING	The neighbours came to collect their cat	6	13.94
PLACING	I place the dog in the car I place more drink for the dog	15	13.01
WASHING	I wash my dog	12	10.46
TAKING	I take the dog to drop off the mail	11	9.71
LEAVING	Leave to walk the dog	3	9.66
WAKING_UP	I cuddle the cat who wakes me up	1	9.32
MEAL	I serve the dogs' meal	128	8.76
LITTLE	Come back from the sheep pen playing with little dog [first name] with her ball	68	6.84
VISITING	Visit by the cat next door	5	6.80
ACTIVITY	Activities performed with the dog	1	5.18
SLEEPING	I sleep with my cats I sleep with my dog	7	5.02
PREPARING_MEAL	Preparation of the dogs' meal	97	4.60
DROPPING OFF	Dropping the dog off with my parents	7	3.80
KEEPING COMPANY	I keep my children's dog company at their home	3	3.48
TALKING	Talk a little with the dog	18	3.27
Terms typical of the vocabulary used for activities performed without animals (level 1/100)			
FEEDING	I feed the dog	23	2.62
BRUSHING	Brushing and meal for the cat I brush the dog	2	2.47
WAITING	Wait at the vet	3	2.43
Terms fairly typical of the vocabulary used for activities performed without animals (level 1/10)			
GOING_TO_BED	I go to bed with my dog	3	2.30
TAKING	Taking the dog to the vet	2	1.85
FINAL	Final time letting the dog out in the garden	4	1.84
TIME	Spend time with my dogs	3	1.72
RELAXING	Relaxing with my animals	1	1.72
PICKING UP	I go to pick up my dog from the vet	12	1.64

Notes: See Table 4-A.

Sources and coverage: INSEE, 1998 and 2010 *Emploi du temps* surveys, France excluding Mayotte, people living in a household for which the reference person is aged 18 or over, having reported at least one activity related to an animal, or one activity from the "Looking after the children" category.

generic terms, used in any context; but there are also terms typically reserved for animals, such as “feed” or even “give food”. Speaking of “meals” would be indicative of a linguistic register more related to humans than animals.

Conversely, the term “cuddling” could, at first glance, be thought to refer to humans rather than animals, but the analysis of the corpus shows that it is, on the contrary, rather characteristic of activities with animals. It is therefore not included in our lists of “anthropomorphic” terms or terms “indicative of equating the animal to a child”.

In addition to the two indicators mentioned above, we also explored other indicators that could reflect a way of expressing ourselves using terms far removed from those used mostly with animals, thus demonstrating a relationship with the animal that could be called “anthropomorphic”: claiming that an activity is performed “with” a pet (for example, not “I walk my dog”, but “I walk with my dog”); putting an animal on the same grammatical level as the human entourage (“I prepare my breakfast and my dog’s breakfast”, or “Looking after children and the dog”). We also consider saying “my animal”, rather than “the animal” or “animal” (or rather than “the dog” or “dog”, etc.), although it is important to be careful with the interpretation

of such a linguistic sign, given that it is more legitimate for the animal’s owner to say that than another member of the household (and therefore, it is in fact legitimate for a single person to say it).

3.3. Single People Use More Non-Animal Terms to Describe Activities Performed with Animals

With these indicators in mind, let us now return to the analysis of the corpus relating to people living in a household that owned at least one pet in 2010,¹² which contains the descriptions of their days by each respondent who reported at least one activity performed with an animal. Table 5 shows the proportion of people who have used one of the terms in the lists we have compiled or one of the specific terms or phrases described in the previous section at least once. Grammatical constructions that place animals and their human entourage on the same level are used by 4%, while between 20 and 25% use terms “indicative of equating the animal to a child” and 26% use the possessive term “my”. Finally, about 12–13% use a term from the list that could be described as “anthropomorphic”, or “non-animal”.

12. We established lists of “non-animal” terms based on activity descriptions from 1998 and 2010, but the analysis can only cover 2010, the only year for which we know if people were living in a household that has at least one pet.

Table 5 – The use of atypical terms in the language used to describe activities performed with animals

	Use of the possessive adjective MY (animal)	Use of the preposition WITH (animal)	Human/ non-human grammatical identity	As a %					
				Use of “anthropomorphic” vocabulary			Use of vocabulary typical of child care		
				At the limit of 1 per 1,000	At the limit of 1 per 100	At the limit of 1 per 10	At the limit of 1 per 1,000	At the limit of 1 per 100	At the limit of 1 per 10
Population as a whole	26.1	17.9	4.0	11.7	12.0	13.3	19.6	22.4	24.3
Female	28.3	17.6	5.0	14.7	15.2	16.9	24.9	27.9	28.7
Male	23.3	18.4	2.6	7.8	8.0	8.8	12.8	15.3	18.6
Single person	39.2	20.6	6.4	21.6	21.7	22.9	28.0	33.4	34.4
Single parent	26.1	6.3	6.8	3.9	3.9	6.7	13.4	13.4	15.5
Spouse in a couple without children	25.4	17.9	3.3	10.6	10.9	12.3	19.6	22.0	23.6
Spouse in a couple with at least one child	16.5	13.8	5.4	10.5	10.5	10.9	18.1	21.1	21.7
Child of a couple or single parent family	35.0	23.4	2.5	3.3	5.1	5.1	18.0	20.8	29.9
Other type of complex household circumstances	16.6	18.1	1.5	10.7	10.7	13.5	14.0	14.8	15.2

Reading note: Among people included in the coverage who have spoken about their pet(s) at least once in the diary they have completed, or in at least one of the two diaries when they have completed two, 26.1% used the expression “my animal” (or “my dog”, etc.) at least once. Sources and coverage: INSEE, 2010 *Emploi du temps* survey, France excluding Mayotte, people aged 18 or over living in a household that owns at least one pet and who mentioned an animal in the description of the day.

These figures show that the lists of “anthropomorphic” words or words “indicative of equating the animal to a child” that we have constructed include words used by a significant proportion of the population: the text analysis software has not designated these ways of expressing oneself in relation to animals as atypical of the way of talking about activities performed with animals because they are very rare, but because they are much more common when not talking about animals than when talking about them.

Beyond these averages, women use more “non-animal” terms or constructions to talk about animals than men do, across almost all indicators. This is also true of single people more than others, while people aged 65 to 74, who could be described as young retirees, as well as young people aged 18 to 24 are more likely to use terms “typical of child care”.

The fact that single people use “non-animal” language significantly more than others when talking about activities performed with animals could lean towards confirming the hypothesis that they have a greater attachment to their animals than other people because they are alone. However, single people are also more likely to be women and are more often elderly, categories that also use this “non-animal” language more than others.

3.4. Other Characteristics Being Equal, Single People Do Not Exhibit Signs of a Stronger Attachment to the Animal

Working on a large sample makes it possible to put things into perspective, which is generally not possible for social psychology studies, the findings of which align with ours, based on more sophisticated indicators. It also makes it possible

Box 4 – Probit Model with Selection Taken into Account

We find that the tendency for a person to behave towards an animal as though it were a human can be explained by a set of factors such as gender, household type and socio-professional category.

As this tendency is not directly observable, the dependent variable is a dichotomous variable with a value of 1 if the person used a term from an anthropomorphic register to describe an activity performed with their animal or a value of 0 otherwise:

$$anthro_i = \begin{cases} 1 & \text{if } \beta_0 + \beta_1 x_i + u_i > 0 \\ 0 & \text{otherwise} \end{cases}$$

where x_i represents all the characteristic variables of the individual i that might explain their tendency to behave towards their animal as they would towards a human and u_i represents an error term.

This simple regression model assumes that the explanatory variables are independent of the error term. It is generally assumed that x_i is exogenous, that is to say that $E(u_i|x_i) = 0$.

The above equation is estimated for the sample of owners who mentioned their pet at least once in the description of their day's activities. We do not actually see the use of the anthropomorphic register for all people with a pet, but only a selection of them; those who mentioned their pet. We estimate the following system of equations in order to take into account this selection, which can distort the results:

$$anthro_i = \begin{cases} 1 & \text{if } \beta_0 + \beta_1 x_i + u_i > 0 \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

$$parleranimal_i = \begin{cases} 1 & \text{if } \gamma_0 + \gamma_1 x_i + \gamma_2 z_i + v_i > 0 \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

where equation (2) takes account of selection. The selected variable z_i , referred to as the exclusion variable, is a variable with ten options, combining the quintile of the number of lines completed in the diary with the number of completed diaries. In order to create it, we first defined the quintiles for the distribution of the number of lines of those who completed a diary, then the quintiles for the distribution of the number of lines of those who completed two diaries; then we combined these results into a single variable with five options. Thus, regardless of the number of diaries completed, being in the first quintile means that a person was not very precise in the description of their day (compared to the other people who described a day), or not very precise in the description of the two days (compared to the people who described two days), etc. In addition, distinguishing between people based on the number of diaries completed makes it possible to retain this information, which remains important for explaining whether or not the person mentioned their pet in the description of the day or days.

The variable obtained in this manner is closely correlated with the person mentioning their animal in the diary: we note that the more detailed the diary is, the higher the probability of the person referring to their pet. We assume that the number of lines completed in the diary has no direct effect on the person using anthropomorphic vocabulary when talking about their animal.

to take into account socio-demographic characteristics that are known to affect the way people express themselves, such as socio-professional category. It is also possible to take into account that not all animal owners report performing at least one activity with their animal when describing their day; in particular, single people are systematically over-represented among those who do report performing an activity, because they are unable to share those activities with other household members (Box 4).

We estimated two models for the use of an “anthropomorphic” term on the one hand, and a term “indicative of equating the animal to a child”, on the other,¹³ together with three models explaining the use of the other linguistic signs mentioned above (Table 6).

13. The two models presented here are based on the use of a term from the lists significant at the 1% level; those based on the use of a term from the lists significant at the levels of 1% and 10% are presented in the Online Appendix (link at the end of the article). They provide similar results.

Table 6 – Models explaining the use of atypical terms in the language used to describe activities performed with animals

	Variable explained: use (over the course of a day) of at least...					
	... a term from a register that is highly atypical of the register used with animals and typical of the one used for...			... one time...		
	... other activities performed without animals...		... child care...	... the possessive adjective MY (animal)	... the preposition WITH (animal)	... a human/non-human grammatical identity
	... in the list of terms with significant specificity at the level of 1 per 1,000					
Constant	-0.39 (0.32)	0.10 (0.25)	-0.66** (0.29)	-1.10*** (0.33)	0.08 (0.36)	
Age						
18 to 24	-0.10 (0.24)	0.39** (0.16)	0.31* (0.17)	0.06 (0.19)	-0.05 (0.31)	
25 to 64	Ref.	Ref.	Ref.	Ref.	Ref.	
65 or over	0.28*** (0.10)	0.19** (0.09)	-0.06 (0.09)	0.03 (0.09)	0.22* (0.13)	
Gender						
Male	-0.22*** (0.08)	-0.23*** (0.07)	-0.13* (0.07)	0.05 (0.07)	-0.04 (0.11)	
Female	Ref.	Ref.	Ref.	Ref.	Ref.	
Status in the household						
Single person	0.05 (0.17)	-0.16 (0.14)	0.49*** (0.16)	0.10 (0.17)	-0.34* (0.19)	
Single parent	-0.16 (0.30)	-0.05 (0.24)	-0.18 (0.26)	-0.26 (0.32)	0.10 (0.30)	
Spouse in a couple without children	-0.12 (0.13)	-0.10 (0.11)	0.13 (0.12)	0.14 (0.13)	-0.50*** (0.15)	
Spouse in a couple with at least one child	Ref.	Ref.	Ref.	Ref.	Ref.	
Child of a couple or single parent family	-0.12 (0.36)	0.16 (0.24)	0.09 (0.26)	0.43* (0.26)	0.12 (0.33)	
Other type of complex household circumstances	0.01 (0.15)	-0.16 (0.12)	0.06 (0.13)	0.17 (0.14)	-0.42** (0.19)	
Pets owned by the household						
Cat(s) only	Ref.	Ref.	Ref.	Ref.	Ref.	
Dog(s) only	-0.39*** (0.12)	-0.50*** (0.10)	0.17 (0.12)	0.33** (0.14)	-0.59*** (0.13)	
Other configurations	-0.31*** (0.10)	-0.38*** (0.09)	0.01 (0.10)	0.14 (0.12)	-0.52*** (0.13)	
rho	-0.50*** (0.12)	-0.57*** (0.09)	-0.17 (0.13)	-0.38*** (0.13)	-0.76*** (0.09)	

Notes: The robust standard errors are shown in brackets. *estimated coefficient significant at the 10% level; **significant at the 5% level; ***significant at the 1% level. Instrumental variable that is “explanatory” of the way people talk about their animals: ten options that combine the quintiles for number of lines completed and number of diaries completed (one or two). The other variables included in the models are social group (9 options), geographical area of birth (6 options), limitations in daily life (3 options), size of the urban area (6 options), whether or not there is a garden, the number of rooms in the dwelling (2 options), the number of diaries completed and the presence of a “Stiglitz column”. Sources and coverage: INSEE, 2010 *Emploi du temps* survey, France excluding Mayotte, people aged 18 or over living in a household with at least one pet.

As regards the use of “anthropomorphic” terms or terms “indicative of equating the animal to a child”, these models show that women use such terms more often, as do people aged 65 or older. This type of vocabulary is also used significantly more by managers in the private sector and people with a garden. These aspects are more difficult to interpret, but they are found in all models. The only result for which all models are not aligned is age: the youngest people, those aged 18 to 24, use terms indicative of “equating the animal to a child” even more than older people, but that is not the case regarding the use of “anthropomorphic” terms.

Our data do not allow us to systematically determine which type of animal people are talking about when describing their activities, whether it is a cat, a dog or another animal. However, it can be determined in some cases, when the person has only cats or dogs. All other things being equal, the various signs of anthropomorphisation are found more often when the household has only cats. The only notable exception is that performing an activity “with” a pet is reported much more frequently when the household has only dogs. On this basis, it will be concluded that this indicator is not like the others, but serves as a reminder that we do not necessarily develop the same type of bond with different types of pets (Doré *et al.*, 2019), even though we cannot take this into account in our study.

Finally, assuming that all other things are equal, particularly gender, age, social group and where the respondent lives, living alone does not increase the probability of using a term included on these lists.¹⁴

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Our study is a reminder that single people have a pet less often than others, but it also shows that single people who do have a pet spend more time with it, including playing or long walks. In addition, they are more likely than others to use vocabulary from a register that could be characterised as “anthropomorphic” to describe the activities they perform with animals in their daily lives. However, we also show that women and older people use this “anthropomorphic” linguistic register more than others. The fact that women and the elderly are more likely to be single explains why those groups use “anthropomorphic” language more than others. Our data therefore do not confirm the theory that people living alone have a greater attachment to their animal.

The literature addresses the question of people’s attachment to their pet from an emotional angle, linking it in particular to whether or not a person lives alone. Our results suggest that it is more of a gender issue. Therefore, this reframes the subject as one that falls into the division of domestic work, which is still more often performed by women, including when they are single. This suggests in particular that our study could contribute to the field of studies on care by including time dedicated to pets. □

14. Leaving aside the notion of all other things being equal, saying “my” animal is more common for single people: the reasons for this are obvious.

Link to the Online Appendix:

www.insee.fr/en/statistiques/fichier/8260969/ES543_Brousse-Bodier_OnlineAppendix.pdf

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