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The Link Between Companion Dogs, Human Fertility Rates, and Social Networks

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Abstract
The number of dogs in Western countries has increased over the past 2 decades, whereas the number of children has remained stable or decreased. Many dog owners, including those with children, say that their pets are more important to them than any human. Presumably, the declining fertility rates contribute to the increasing value of dogs in the lives of people, and dogs fill an empty niche. The companion dog cultural runaway theory posits that the change in dog-keeping habits has both biological and cultural evolutionary roots. Human ancestors developed a cooperative breeding system 2 million years ago, with the community aiding in child-rearing. Because people currently do not perceive the level of social support and trust to which they are biologically adapted, they seek alternatives. One coping strategy may involve transferring genetically based prosocial attitudes, such as the tendency to engage in parental behavior, to dogs. Western culture supports this shift and portrays dog ownership positively. Moreover, the biological evolution of dogs, with the spread of short-headed, small-sized lapdogs, also contributes to them being viewed as "children." Dogs may facilitate or hinder the restoration of human network complexity, but this area is currently largely unexplored.

Keywords
cultural evolution, human-dog relationships, social support, cooperative breeding, social networks

Data suggest that over recent decades, people have increasingly valued dogs and shifted their interest toward dogs and away from infants. This trend raises questions about the depth of human relationships, including parent-child connections. In the United States, the number of dogs has increased by 37 million since 1996, surpassing the number of children (Fig. 1a; Chang, 2023; Korhonen, 2024a; Larkin, 2024). A similar trend is observed in the percentage of households with

children compared to those with dogs (Fig. 1b; Korhonen, 2024b; Larkin, 2024; Shahbandeh, 2024). Data from Google Trends also show that the term “dogs” is now searched more frequently than “children” (Fig. 1c).

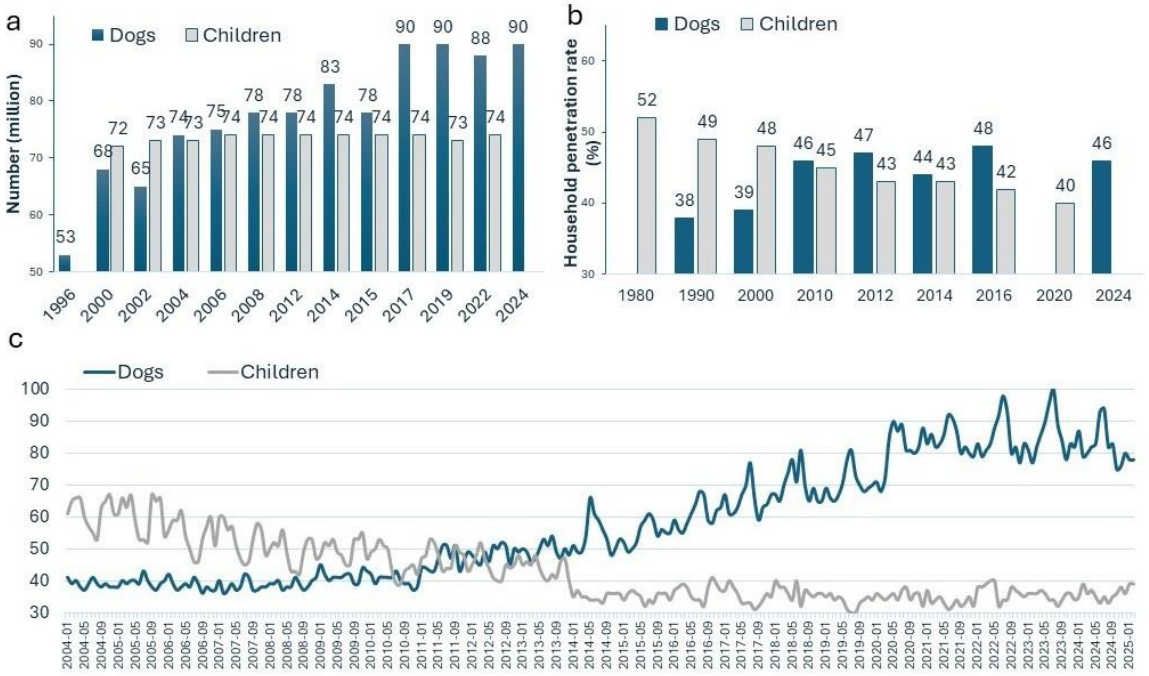

Figure 1. Data indicating shifting interest in dogs and infants over recent decades in the United States. The graphs show (a) the number of dogs versus children from 1996 to 2024, (b) the percentage of family households with dogs versus children from 1980 to 2024, and (c) relative web-search interest for the terms “dogs” and “children” on Google Trends from 2004 to 2025.

The rising global demand for pet food highlights the growing importance of pets, with expenditures increasing from less than $30 billion in 2000 to $102 billion in 2020. In addition to higher disposable income, this growth is largely attributed to the humanization of pets (Hobbs et al., 2024), which can have positive outcomes because it often motivates owners to prioritize providing their pets with a standard of food and comfort comparable to their own. Indeed, virtually everyone in convenience samples (i.e., populations readily available to researchers) considers their dog a member of the family (e.g., Kubinyi et al., 2009). Even in a recent nationally representative survey in Hungary, a substantial 66% of respondents shared this view (Kubinyi & Varga, 2023). When asked to list their family members, many mention their animals (Davies & Davies, 2008). The never-married, divorced, widowed and remarried people, childless couples, newlyweds, and empty nesters are the most attached to their dogs and the most likely to anthropomorphize them (Albert & Bulcroft, 1988). Many owners refer to themselves as pet parents and describe their pets as “fur babies,” suggesting, at least in theory, that they care for their dogs with similar devotion and love as for children (Volsche, 2021). But perhaps the most surprising is that, in a Hungarian convenience sample, 68% of dog owners without children agreed with the statement that their dog means more to them than any human, and this percentage was not much lower at 52% for owners with children (Szánthó et al., 2017). Because young, educated women living in cities were overrepresented in the convenience

sample, the study was repeated with a sample representative of age, gender, education, and residence (Kubinyi & Varga, 2023). In this sample, 19% of childless owners and 10% of owners with children considered their dog more important than any human (Fig. 2). One in 10 is still a significant proportion, highlighting the emotional value attributed to dogs.

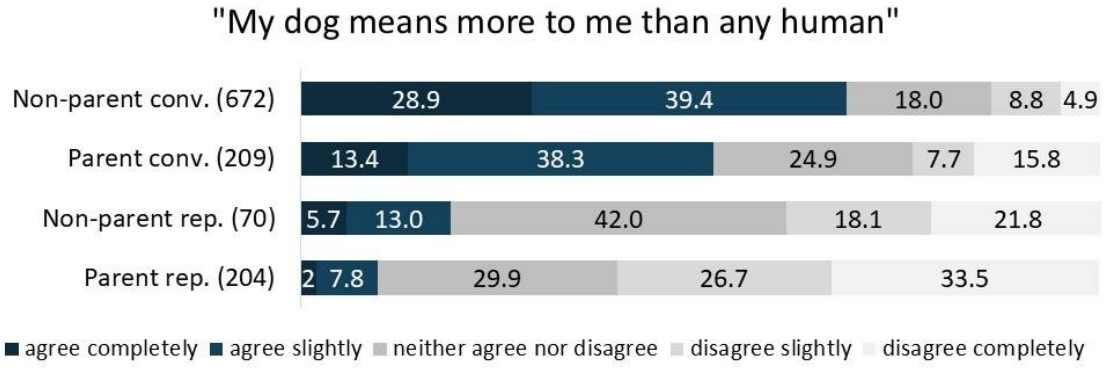

Figure 2. Percentage of agreement with the statement "My dog means more to me than any human" on a 5-point scale (1 = disagree completely, 5 = agree completely) among both convenience (conv.; Szánthó et al., 2017) and representative (rep.; Kubinyi & Varga, 2023) samples of childless owners and owners with children in Hungary. Sample sizes are shown in parentheses.

Link Between Companion Dogs and Human Fertility Rates

Referring to dogs as family members and fur babies may seem like a semantic change, but valuing dogs more highly than anyone else, even one's own children, indicates a significant cultural shift. This might be linked to decreasing human fertility rates: 5.3 to 2.3 births per woman between 1963 and 2023 globally (Roser, 2014). The data presented in Figure 1 suggest that dog keeping negatively affects the desire to have children. Pope Francis shares this view: "Today . . . we see a form of selfishness. . . . We see that some people do not want to have a child . . . but they have dogs and cats that take the place of children" (BBC, 2022). There are indeed childless owners who have made it clear that their dog provided a satisfying substitute for a child (Laurent-Simpson, 2017; Shir-Vertesh, 2012). Women who have positive attitudes toward their dogs tend to have a more negative attitude toward motherhood, and mothers with dogs perceive motherhood as more burdensome, which may prevent them from having more children (Temesi et al., 2020). Moreover, a dog can contribute to reducing the number of children not only by taking over the role of a child (single child or sibling) but also by distracting attention from the potential coparent. Investing a significant amount of time, money, and emotional commitment in a pet may be linked to limited resources to maintain a romantic relationship. The lack of a partner is the leading reason for not having children (Miettinen et al., 2015). This effect might be moderated by owners' anxious attachment style toward other people (Northrope et al., 2024).

However, the number of people who regard their dog as a substitute for children is potentially low (Gillet et al., 2024). In contrast, several studies suggest that dog ownership is positively, rather than negatively, related to fertility because families with children are more likely to own dogs (Albert & Bulcroft, 1988; Kubinyi & Varga, 2023). A simple explanation for this correlation is that larger families often have larger homes, providing more space for a dog. But it is also possible that dog ownership

may increase biological fitness (i.e., having more children). Given that women tend to find men with dogs more attractive (Tifferet et al., 2013), male dog owners may have a higher likelihood of fathering children. Furthermore, assessing a partner's level of involvement in care responsibilities may increase the stability and, thus, the number of children in future families. Shir-Vertesh (2012) found that half of the young couples in their study referred to their pet as a "prechild," suggesting that the pet is seen as a preparatory step to having children.

Decisions about family size are influenced by many factors, including relationship status, economic situation, cultural norms, and access to childcare assistance. Accordingly, it is probably not that increasing dog ownership and changing attitudes affect human fertility but rather the other way around—that declining fertility rates contribute to the growing value of dogs in the lives of people. In other words, dogs do not actively replace children in many people's lives; they fill an empty niche. Testing this hypothesis would require a multidisciplinary approach, combining quantitative data analysis, such as correlational studies involving fertility rates, dog ownership, and attitudes toward dogs in longitudinal and cross-sectional analyses as well as qualitative methods (e.g., by conducting in-depth interviews in societies with varying fertility rates about the role of dogs in family structures).

Implications for Human Relationships

Humans prefer social interactions with kin over nonkin. The decrease in the fertility rate has led to a decrease in the number of relatives. Using the example of David-Barrett (2019), if a woman raises two children instead of five, the number of same-generation relatives (siblings and cousins) is reduced from 44 to 5, with serious consequences for human social networks. In addition, a number of other factors, such as increased mobility, make the maintenance of personal relationships difficult and undermine the formation of stable, supportive communities. This is of global importance because people with lower social integration have a significantly higher risk of death than people with stronger social connections (Holt-Lunstad et al., 2010). Social inclusion is better for health than not smoking, exercising, and eating healthily.

The lack of social support from relatives can be alleviated with friends, although it might not always be sufficient for an individual to have a secure social network. Sociologists measure the quality of a social network by interconnected relationships, often referred to as "closed triangles," in which all participants know each other. Family members have typically known each other since birth, which allows their relationships to be characterized by a large number of closed triangles. This interconnectedness creates a "safety net," whereby strains in one relationship can be mitigated by others. It fosters mutual understanding, reduces the likelihood of miscommunication, promotes accountability by discouraging misbehavior through higher visibility, strengthens social identity, and enhances the sense of belonging. In contrast, in friendship networks, a person's friends (from elementary school, high school, soccer club, etc.) may not know each other and do not form closed triangles. This phenomenon can also be one of the explanations for the current increase in social alienation because one has to navigate separate, unconnected relationships, which can lead to the compartmentalization of one's life (David-Barrett, 2019). The adverse effect can be offset if friends find a common area of interest. If, for example, they are all dog owners and like to walk dogs together, this leads to an increase in closed triangles and thus an increase in the sense of security and reliability in their social network. The number of closed triangles can also be increased by adopting nonhuman "friends" or "family members" (i.e., pets). The impact of pets on social networks may be even more pronounced in smaller families, in which the addition of a pet may have a relatively greater impact on social dynamics (Fig. 3).

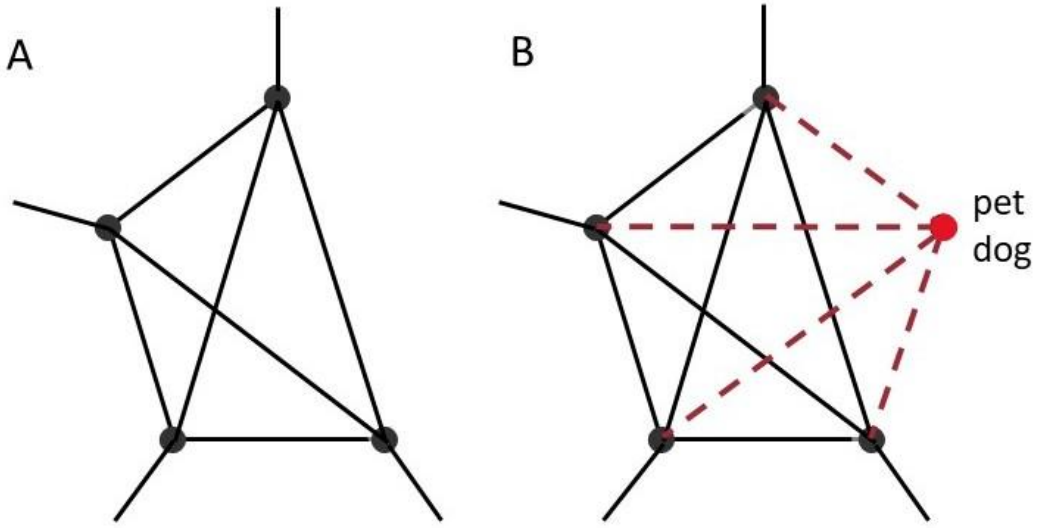

Figure 3. The impact of a dog on a family network. The illustration shows that adding a dog to a family of four can increase the number of closed triangles from (a) four to (b) 10, potentially making each member feel safer and more trusting in their group, although dog-human relationships are presumably qualitatively different, as indicated by the dashed and colored lines.

On the other hand, owning a dog can sometimes negatively impact human relationships because it is not always without challenges. Behavioral issues such as aggression, excessive barking, fearfulness, separation anxiety, and chronic illnesses affect at least one third of dogs (Meyer et al., 2023). These problems can cause significant stress for owners and may lead to social isolation by limiting participation in social activities. Additionally, relying exclusively on a dog for emotional security and companionship can contribute to social withdrawal and may mask undiagnosed or untreated mental-health conditions, such as anxiety or depression. These issues can be further exacerbated if the pet becomes ill or passes away.

Overall, keeping dogs as family members or for recreational purposes may either facilitate (catalyze) or hinder (inhibit) the restoration of human network complexity, yet this area remains largely unexplored. Future studies should include surveys targeting both dog owners and non–dog owners to gather data on the number and quality of human relationships, perceived emotional reliance on pets, and participation in pet-related social activities across different cultures. Longitudinal studies could further examine how acquiring or losing a dog affects social networks and psychological well-being over time. Additionally, investigating the impact of other types of pets—such as cats, birds, small mammals, and reptiles—on social networks could provide valuable insights.

The Companion Dog Cultural Runaway Theory

The view of dogs as family members in Western cultures has significantly increased (“run away”) in the past decades and has gone from a relatively rare phenomenon to a common one. This trend may be explained by the hypothesis that people are turning to dogs as a coping strategy because of declining human fertility and other demographic and sociocultural changes (Fig. 4). The change in

dog-keeping habits has both biological and cultural evolutionary roots. The construction of this theory is outlined below.

Two million years ago, the ancestors of modern humans (Homo genus) lived in cohesive groups of close relatives. The mothers gave birth to slow-maturing, large-brained offspring that required a significant energy investment, but the time interval between births was short. This evolutionary development was possible only because Homo mothers, unlike nonhuman apes, relied on the support of the rest of the group to care for their offspring. Cooperative breeding and alloparenting (i.e., when individuals other than the biological parents contribute to the care and upbringing of offspring) were fundamental to the evolutionary success of the human species. Intense hypersociality and prosociality, mostly manifested in caring for others, merged with the advanced cognitive system already characteristic of the ape system (Burkart et al., 2009; Hrdy & Burkart, 2020). As a legacy of this particular biological evolution, humans today still have a latent, sometimes unrecognized desire to care for others and to receive unconditional social support ("unconditional love").

Since the Agricultural Revolution (12,000–14,000 years ago), however, archaic communities have begun to erode. The Industrial Revolution (18th and 19th centuries) accelerated the process. In recent decades, socioeconomic changes, including increased urbanization, an aging population, living in small households, social isolation, changes in family structures, digital communication, ideological changes, work-life imbalances, mobility, and migration (Fig. 4), have almost eliminated traditional kinship-based (emotional and practical) support systems. In a recent study, 87% of Hungarian adults reported no contact with children of preschool age (based on the data set of Kubinyi & Varga, 2023), which is significantly different from the norms of archaic groups, in which intergenerational interactions were frequent, and child-rearing was a shared responsibility among extended family members and the broader community (Hrdy & Burkart, 2020). Therefore, if a Homo mother does not feel social support, she often refuses to raise a child. Given the high dependence of mothers on alloparental assistance, the perceived lack of social support may be one factor contributing to declining fertility (Hrdy & Burkart, 2020).

Currently many people do not perceive the level of social support to which they are biologically adapted, which may lead to social deprivation, loneliness, stress-related illnesses, and depression (e.g., David-Barrett, 2019). One coping strategy could involve transferring the genetically based prosocial tendency to seek relationships and parental behavior to another target: pets—and primarily dogs because of their human-like sociocognitive skills, attraction to humans, tolerance/need of physical contact, tractability, and adaptability (e.g., Topál et al., 2009). Although emotional attachment to dogs has existed in human societies for thousands of years, it has been subjected to negative and hostile attitudes from monotheistic religions. This changed in the late Middle Ages but primarily the economic elite—the aristocracy and bourgeoisie—could afford to keep dogs for companionship, recreation, or as status symbols (Menache, 1998). Later, changes in norms and economic prosperity opened up the possibility of keeping dogs for social purposes and not only for utility to almost all.

Dogs can play multiple roles in a human environment that lacks kinship support. Because of their human-like social and cognitive abilities, they can be "alloparents," providing emotional support and companionship. They can also act as surrogate children because of their dependency on humans, thus providing humans with the opportunity to nurture someone and feel a sense of parental love and care. They can be the children's "siblings" or playmates who keep the children company. Their versatility contributes to the strong emotional attachment and special position they occupy in the

lives of their human peers. This does not exclude the fact that many still see dogs as domestic animals kept for utilitarian purposes or as a hobby (Gillet et al., 2024).

Culture has a profound impact on dog keeping. For example, in Saudi Arabia, a predominantly Muslim country, there is one companion dog for every 1,000 people, whereas in the United States, there are 225 dogs per 1,000 people (Herzog & Rowan, 2019). Cultural beliefs (memes) have developed that influence companion animal ownership. Western-style media often highlight the mental- and physical-health benefits of dog ownership, although these effects are not universal (reviewed in Herzog, 2011; Rodriguez et al., 2021). Generational shifts may also contribute to cultural changes; for example, in China, younger individuals are more inclined to prefer dog and cat videos (Zhang et al., 2024).

The human biological and cultural evolution of dog keeping directly affects the biological evolution of dogs, which in turn affects cultural evolution. Because of specific breeding practices, dogs have become shorter-nosed and smaller over the past 2 decades, presumably because dog owners increasingly prefer dogs that look like babies despite their many health problems (Teng et al., 2016). These dogs are characterized by the baby schema: large, round head, high forehead, short nose, big eyes, and cuddly size. Moreover, their behavior also suggests helplessness and dependence (Ujfalussy et al., 2023). The perceived resemblance of dogs to babies likely plays a role in their increasing acceptance as family members. Culture conveys the message that brachycephalic dogs showing infantile features are “cute” and fashionable but largely ignores welfare issues (Bognár & Kubinyi, 2023).

The demand for specific breeds can lead not only to an increase in health issues but also behavioral problems in these breeds, contributing to the abandonment or surrender of dogs when the trend wanes. Not all dogs adapt well to living in human families or urbanized environments. Some may suffer because of confinement, noise, poor socialization, owner-related factors such as stress, “civilization diseases” such as diabetes, and genetic predispositions. Certain behaviors for which canines were historically bred (e.g., aggression in terriers, the herding propensity in herding dogs) are now viewed as undesirable by most dog owners. In extreme cases, owners keep dogs as child surrogates—dressing them in clothes, pushing them in baby buggies, frequently holding them in their arms, and showering them with kisses and hugs—without considering the animals’ needs. Breeders should prioritize selecting for traits that promote adaptability and well-being, whereas owners should focus on providing proper training, autonomy, and care (e.g., Meyer et al., 2023).

Figure 4. The companion dog cultural runaway theory and related hypotheses (H1–H4). Humans, as cooperative breeders, have an innate biological evolutionary tendency to connect with and care for others, particularly the youngest generation. In modern societies marked by increasing social alienation, this tendency can be partially fulfilled through relationships with dogs and supported by cultural evolutionary processes.

Conclusion

The trends in companion dog ownership suggest that, in Western cultures, there is a significant gap in caregiving and acceptance, which dogs may partially fill. Since this void was traditionally occupied by human relationships, it raises the question of whether it would be more beneficial for society if individuals with unfulfilled caregiving instincts redirected these toward humans, primarily children. For example, could childless or elderly people become involved in the daily care of neighboring children who may be receiving insufficient attention? In this way, future parents could also get genuine community support to raise their children. Dogs can also participate in these endeavors. A well-socialized dog can connect people and promote children's development. On the other hand, those who wish to continue keeping dogs should remember that dogs can act as "social glue" within a neighborhood, facilitating positive interactions (Wood et al., 2015). It is essential that a dog actually strengthens an individual's social network and support system rather than diminishing it.

Recommended Reading

Amiot, C. E., & Bastian, B. (2015). Toward a psychology of human–animal relations. Psychological Bulletin, 141(1), 6–47. Demonstrates how research on human-animal relationships has implications for a wide range of psychological topics.

Bradshaw, J. W., & Paul, E. S. (2010). Could empathy for animals have been an adaptation in the evolution of Homo sapiens? Animal Welfare, 19(Suppl. 1), 107–112. Explores why some animals elicit

stronger nurturing responses than others and discusses the redirection of nurturing behaviors toward nonhuman young, often triggered by visual stimuli known as “cuteness,” or what Konrad Lorenz referred to as “Kindschenschema.”

Charles, N. (2016). Post-human families? Dog-human relations in the domestic sphere. Sociological Research Online, 21, 83–94. Examines how companion animals become part of the family and addresses the argument that this marks the emergence of posthuman families.

Herzog, H. (2021). Some we love, some we hate, some we eat: Why it’s so hard to think straight about animals (2nd ed.). Harper Perennial. Explores the complex and often controversial relationship between humans and animals, covering topics such as pet ownership, animal-rights activism, and dietary habits.

Miklósi, Á. (2014). Dog behaviour, evolution, and cognition. Oxford University Press. Presents how dogs have evolved from their wild ancestors and adapted to the human environment and how the canine mind works.

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