

The welfare of 21st century pet dogs living in homes within developed nations has invited relatively little attention as a valid and deserving area of research to date. The complicated, rapidly changing nature of human relationships with canine companions has coincided with the emergence of a multi-billion dollar pet industry in recent decades, fostering competing interests and the proliferation of numerous collective blind spots in approaching any objective analyses of welfare for the millions of dogs living in pet conditions. As a result, the welfare of these affected animals is directly compromised in a number of ways and may not be fully understood outside of a larger contextual framework as, “in practice, interpretation of welfare status and its translation into the active management of perceived welfare issues are both strongly influenced by context and, especially, by cultural and societal values.” (Ohl and van der Staay, 2011). It is important to identify certain significant obstacles in practically approaching conversations about the welfare of modern pet dogs as the first order of business in improving it, that they might be ultimately overcome rather than actively undermining advancements in husbandry for this population of animals. A number of widely held, erroneous beliefs about domestic dogs with very real, far-reaching consequences have clouded both pet industry and public awareness about the reality of a hidden welfare crisis unfolding in homes around the world.

“All dogs are, by definition, pets.”

As a species' natural history presents an elemental factor for welfare considerations for any captive animal, it is crucial to note that the vast majority of dogs in the canine gene pool were not in fact selected exclusively for companionship, but rather for a range of behavioral functions and conditions often contradicting with pet environments (Morris et al., 2011). Popular messaging has encouraged the homogenization of dog breeds into a singular “pet” concept in which a dog's biological integrity may be displaced by a prescribed role of human companionship. People readily struggle to separate their own expectations, perceptions, attitudes, emotional dependence, and attachments regarding their canine companions as well-loved “pets” in attempting to consider the distinct interests of their dogs as sentient, biological animals living in contemporary conditions for which they are often poorly adapted (Meyer et al, 2022; Grandin, 2011; Coppinger & Coppinger, 2002). Often morally ambiguous, such commonplace human concepts and experiences in bonding with, caring for, and living with dogs as adopted “family members” can greatly distort owners' understanding of the uniquely canine needs of their charges as creatures entirely dependent on their keepers for their welfare as captive animals (Meyer et al., 2022; Novack et al., 2023), potentially leading to direct, albeit largely unintentional, negligence of certain biological and behavioral needs.

While the niche of the domestic dog may be that of living in human conditions (Novack et al., 2023), modern pet environments now bear little resemblance to the lives humans have shared with dogs over thousands of years. Due to the changes in and mounting restraints of standard responsible pet-keeping practices in recent years - leashing, crating, confining, and otherwise generally controlling the actions of dogs at all times - canine companions have all but lost the critical agency to adapt their behavior to better cope with problems they face in increasingly foreign and complex habitats for which they are not biologically prepared, resulting in significant welfare concerns (Arndt et al., 2022). This general “petification” (Meyer et al., 2022) of dogs indicates a form of social distancing enabling compromised welfare. If “the welfare of an animal is its state as regards to its attempts to cope with its environment” (Broom, 1986), the mounting measures of captivity (Grandin, 2010) and related pressures to inhibit normal, functional, and adaptive canine behavioral responses across the range of often incompatible preserved phenotypes must be recognized as not only conflicting with good pet dog welfare, but in fact as facilitating the opposite. This brings us to the second troublesome popular concept and obstacle in approaching questions of welfare for dogs kept as pets.

“Well-loved pet dogs do not have welfare problems.”

Canine keepers usually being such members of the general public, those charged with the husbandry of this particular animal population are both under-educated in animal welfare science and vulnerable to the effects of popular messaging and marketing from unqualified authorities (Sonntag and Overall, 2014). Regardless of the recent historical and genetic contextualization of diverse working canine phenotypes and associated behavioral diversity (MacLean et. al, 2019), as well as mounting evidence of welfare deficits manifesting in the rise of serious behavior problems (Beaver et al, 2024; Novack et al., 2023) further resulting in the associated relinquishments and behavioral euthanasia from the same in the contemporary pet dog population (Morris et al., 2011; Siracusa et al., 2017), both the mainstream pet dog industry and general dog owning public seem to fundamentally resist the acknowledgement of captive conditions and associated compromised welfare for pet canines on the most basic level. As a result, animal welfare science concepts and models have largely failed to be practically extended to the pet dog population, another popular assertion apparently preferable.

“It’s all how you raise them.”

Tempting as it may be to adopt such a narrative, it is nonetheless a remarkable phenomenon that we cling to this concept as a dog-loving culture in the 21st century despite the scientific evidence to the contrary. This notion is still deeply held by many individuals who are directly responsible for the care of captive canines, with extensive consequences for the welfare of millions of animals. From the perpetuation of outdated models of obedience and associated abusive training techniques to the reduction of complex, sentient,

biological animals with distinct natures and needs to those who are perceived as wanting only to be loved by their humans - our misconceptions of who dogs are on the most fundamental level may preemptively undermine efforts to improve their welfare. Without a thorough appreciation for the natural history and telos of the species' in all its phenotypic diversity, caretakers may fail to provide meaningful, comprehensive care across the five domains and the resulting affective standard of a good life (Green and Mellor, 2011).

A complicated picture of pet dog welfare

In order to reconcile the imbalances catalyzing the pet dog welfare crisis in the 21st century, homed pet dogs must be identified as an actively at-risk species and population of animals; bridges may be constructed between animal welfare scientists and the pet dog industry in the interest of developing and dispersing well-informed models and standards of care (Novack et al., 2023; Fernandez, 2024). Conversely, the prevalent successes regarding certain elements of modern canine welfare should be acknowledged as instrumental, identified assets in approaching potential resolutions going forward, as dog owners are apparently up to the task of investing heavily in the best interests of their canine companions (Zhang et al., 2022; Kong, et al., 2025). Acknowledging our successes, we can appreciate the tremendous advantages that assets such as reliable nutrition, safety from hazards, and modern veterinary medicine provide for pet dogs compared to the standards observed in free-roaming populations of dogs in developing countries (Meyer et al., 2022). While impressive, however, these functioning-associated welfare domain advantages highlight not only certain benefits dogs may enjoy in pet home conditions; they also reflect a general bias towards physiological indicators of welfare for this population of animals, and are themselves not without some concerns.

Nutrition

Regarding ample and appropriate nutrition as the first domain of animal welfare, the majority of modern pet dogs may be fed a consistent diet of kibble and therefore avoid extreme experiences of hunger common for their village dog counterparts. Considering water intake, most pet dogs likely also experience ample provisions of hydration to satiate their thirst as long as they are not confined without its availability.

However, a combination of nutrition-related factors rooted in multiple welfare domains contribute to the largest health problem facing the pet dog population - obesity. According to Cornell University, over 60% of pet dogs are obese as of 2024, with such malnutrition conditions being challenging to treat for a number of reasons previously identified here as larger societally-facilitated agents. People may provide excessive food or treats as expressions of love or affection for their dogs in response to effective pet industry marketing or directives from pet training programs, inadvertently contributing to their pet's obesity. Even when excessive,

many pet dogs may fail to enjoy a “varied and interesting diet” as David Mellor suggests is important in his accounting of nutritional standards in the first domain - eating only processed kibble daily without any experiences of different textures, flavors, and chewing experiences valuable to their species and so having some “eating-related boredom” (Mellor et al., 2020). Additionally, it is possible that the nutrition provided to pet dogs may not reflect their natural sources and patterns of species specific foraging as hunters and scavengers (Coppinger and Coppinger, 2002). Despite these complications, the first domain of nutrition is one that sees certain advantages over free roaming or wild populations of animals in many ways.

Physical Environment

One of the complicating factors for pet dog habitat examination is the complexity of spaces included in its accounting compared with that of other captive species of animals. For most pet dogs, the physical environment is not only the interior of the home but rather encompasses the yard and neighborhood in which the dog lives, as well as those locations frequented by the dog such as daycares, dogparks, training centers, veterinary hospitals, and grooming salons. Though impossible to include all elements of these various spaces of the pet dog’s environment from a welfare perspective in this particular discussion, it is necessary to acknowledge the scope of variables presented in these conditions which must then be navigated by the pet dog as factors with which to effectively cope in captivity.

In considering the physical environment of a dog’s residence, we observe a number of layers of concern. David Mellor advises that “uncomfortable or unpleasant physical features of the environment” be avoided. While some such unpleasant features may be more obvious to pet owners, caretakers may not recognize potentially distressing conditions in pet homes such as slippery or reflective flooring, which can make movements through the home uncomfortable, painful or frightening for dogs (Grandin, 1996). Conversely, while home furnishings such as couches, chairs, tables, and beds could theoretically provide considerable choice and control in their environments as assets to cumulative welfare, many dog owners find their pet’s usage of these surfaces to be unacceptable and so discourage it. Furthering behavioral restrictions in the home, many dogs routinely experience additional physical confinement when kept in crates or other reduced spaces. Though largely perceived as a standard acceptable pet keeping practice, crating dogs for long periods of time can restrict functional allostatic responses to internal conditions such as body temperature, thirst, or loneliness as well as prohibit natural behavioral responses to external events. While countries such as Sweden (Swedish Animal Welfare Act) have adopted welfare guidelines which prohibit the usage of crates and outline the maximum period of time pet dogs are permitted to be left alone, other countries such as the United States see routine practices of leaving dogs alone (and crated) for 8 or more hours a day. On

the other hand, the overcrowding of mixed-species cohabitants both inside and surrounding the home can introduce the potential for a range of other welfare concerns regarding the physical habitats of pet dogs.

The domain of the physical environment also includes considerations for sensory conditions such as smells, sounds, sights, lighting, temperature, and air quality. Pet owners may not recognize significant challenges to canine welfare in this regard. The uniquely remarkable olfactory capabilities of dogs, for example, are easily assaulted by many common household odors such as soaps, perfumes, candles, cleaning chemicals, environmental air pollutants, etc. Dogs may face further offenses from staple home features such as LED lighting, which can create a distressing strobe-like flicker effect for them given their more sensitive flicker fusion rate relative to humans who do not perceive it (Abrams et al., 2025). Many other common household appliances and features of technology may present noxious auditory stimuli as well (Grigg et al, 2021), and indeed sound sensitivity is a growing welfare concern and behavior problem observed in the pet population (Beaver, 2024).

Environmental challenges, of course, do not simply arise from inside of a home; in fact they can permeate the environment from the surrounding residences and their inhabitants, buildings, vehicles, construction equipment, etc. With the vast majority of Americans now living in urban conditions (Louv, 2005) and census data reporting a population density of cities like New York City exceeding 28,000 people per square mile even in 2016, many pet dogs may struggle to cope with the nature and volume of associated sensory information in their pet habitats related to such high levels of human activity (Sonntag and Overall, 2014).

Health and Fitness

The fact that the majority of pet dogs will experience the benefits of modern veterinary medicine is undoubtedly a remarkable deposit for the welfare accounts of canine companions whose families are able to afford pet healthcare. The animal's experience of medical treatments and related restraint, confinement, pain and stress does, however, present some cost to overall welfare that should be appreciated as dogs may not understand these interventions as intending to be in service of their best interests. The overall health and fitness of these pet animals, however, is even more complicated for a number of reasons.

Pure bred dogs continue to be in high demand, with such popular breeds as the French Bulldog reaching America's number one spot for the last three years. While many people are understandably attracted to their neotenous morphological features, the increasing popularity of such brachycephalic animals represents a concerning trend towards widespread congenital conditions in the modern pet dog population that can severely compromise the health and welfare of pets (Bognar et al., 2025). While these affected breeds may

have the most egregious rates of congenital disorders and related suffering, human artificial selection for smaller gene pools and deleterious traits in the name of breed standards catalyzes negative welfare for many other pure bred dogs. Pure bred dogs in general are more likely to have genetic disorders and diseases such as epilepsy, osteosarcoma, lymphoma, hypothyroidism, hip and elbow dysplasia, mast cell tumor, hyperadrenocorticism, cataracts, patellar luxation, and many other health problems than mixed breed dogs (Bellumori et al., 2013). The distortion of morphological features through the selection for deleterious traits such as brachycephaly and extreme paedomorphism in dog breeding practices presents a wealth of welfare concerns for the life of the animals (Sonntag & Overall, 2014; Meyer et al, 2022), and yet is remarkably common. Additional suffering may be experienced for breeds of dogs for whom cosmetic procedures such as tail docking and ear cropping are routinely conducted. Breed related genetic disorders may also compound the negative effects of what is often insufficient exercise for many pet dogs, should temperature regulation and respiratory function be compromised as a condition of the breed (Ekenstedt et al., 2020) and so contribute to canine obesity due to restricted activity. Even for those pet dogs who are not negatively impacted by congenital conditions, the quantity and quality of exercise provided is often reflective of the sedentary lifestyles shared with their human companions, and is therefore a source of concern related to animal health as well as our own (Ryan, 2018).

Further mirroring the malaise of modern humans, the treatment of behavioral symptoms of underlying welfare deficits in pet dogs with pharmaceuticals reflects the mounting tendency to further restrict, or “treat”, otherwise natural attempts to cope with unnatural conditions. Though clearly warranted in a great number of cases to optimize welfare for a given animal, the number of pet dogs on behavioral pharmaceuticals has grown rapidly in recent years in tandem with the same in human populations (Weng et al., 2025). The proliferation of pathologic behavioral states in pet dogs indicates strained systems and should draw our attention clearly to the fourth, and in fact most compromised, domain of all - behavioral interactions.

Behavioral Interactions

In considering the welfare implications of the fourth domain regarding modern pet dogs, it is helpful to remember what the goalpost should be in regards to provisions and experiences in captivity which afford and promote environmental optimization (Littlewood et al., 2023) through agency-driven behaviors and interactions with its features and members: “Based on the adaptability of the animal, and taking the importance of positive emotional states and the dynamic nature of animal welfare into account, an individual animal is likely in a positive welfare state when it is mentally and physically capable and possesses the ability and opportunity to react adequately to sporadic or lasting appetitive and adverse internal and external stimuli, events, and conditions. Adequate reactions are elements of an animal’s normal behavior. They allow

the animal to cope with and adapt to the demands of the (prevailing) environmental circumstances, enabling it to reach a state that it perceives as positive, i.e., that evokes positive emotions.” (Arndt et al., 2022). The conflicting prevailing societal conception about modern canines - that they should be made to suppress their own biological directives and adaptations as dogs in order to be quietly subservient to their humans as amenable pets - must be recognized for the contradiction it presents to positive welfare for this minimally considered population of captive animals. This paradigm not only directly compromises canine adaptability to pet life conditions; it also creates ripples of additional conflict between dogs and their humans, as pet owners become increasingly frustrated by the accumulating behavioral evidence of their dog’s struggle to cope with and adapt to the same (Beaver, 2024). Indeed, the greatest area of concern demanding attention in considering the interests of modern pet dogs may lie in deficits in the natural living realm and their consequences for the affective states and cumulative welfare of these animals.

Behavioral Interactions with the environment -

As with the other domains, the natural history of an animal must first be taken into consideration when providing for the respective welfare needs of captive animals. This critical point of reference for a species’ distinct biology, phylogeny, and associated requirements has been almost entirely neglected in approaching questions of welfare for domestic dogs - a consequence of their collective “petification”. Many modern pet owners and professionals are poorly versed in the historical contexts shared between people and dogs preceding modern conditions in which dogs performed valuable specialized functions with and for humans as specialized animal tools and partners (Brophey, 2018).

Through generations of artificial selection for both hypertrophied or muted expressions of natural canine behaviors in very specific contexts and conditions, humans forged remarkably diverse genotypic variations of the domestic dog to create working trackers, hunters, protectors, herders, ratters, entertainers, and companions (Dutrow et al., 2022; MacLean et al., 2019). Though most modern humans have little need for these once prized behavioral functions in dogs, their unique phenotypes have been preserved in the canine gene pool as breed standards and have therefore maintained the associated behaviors inextricably linked to their respective forms (Coppinger and Feinstein, 2015). The consequence of the range of phenotypic diversity in the domestic dog population now being almost universally positioned into pet dog conditions that neither promote nor afford the expression of artificially selected, highly motivated behaviors for these animals represents an immeasurable scope of welfare challenges. Not only are modern dogs suffering the frustration of obstructed access to these functional and adaptive behavioral interactions with the complex and expansive natural conditions of the past; the vast majority of dogs are now commonly expected and actively trained to inhibit these expressions so elemental to their welfare (Miller and Polack, 2018), as their

human keepers no longer find them desirable (Novack et al., 2023). Some may pose that recent generations of pure bred dogs have been under sufficient further selective pressure for domestication and adaptability to pet conditions as to render such original underlying natural canine behaviors obsolete regarding welfare needs in behavioral interactions with the environment. However, dogs more likely maintain the motivation for these original expressions in the canine ethogram and so require affordances for their natural behavioral diversity (Miller, 2020) despite these efforts, in the same way that domesticated pigs readily revert to the behaviors of wild swine under natural conditions (Barnard et al. 1996; Jensen, 1986; Stolba and Wood-Gush, 1989). While an encouraging start, popular enrichment products for dogs such as food dispensing toys, puzzles, and snuffle mats do little more than scratch the surface of their behavioral needs of pet dogs who largely maintain the scope of dynamic species-specific behaviors of their own wild counterparts (Morris and Grandin, 2011). New community resources such as rentable fenced spaces like “SniffSpots” generally provide a more meaningful experience affording natural canine behaviors, as they are designed with canine agency in off-leash natural spaces in mind.

Such considerations should extend to questions of breed-specific welfare requirements for behavioral interactions with the environment. For example, livestock guardian dogs (LGDs) have been developed to independently patrol and protect extremely large tracts of land and their related animal charges from predators and intruders (Coppinger and Coppinger, 2002). As a result of these selected natural behaviors and related environmental conditions, LGDs may suffer excessively in restrictive common pet environments in the same way that some wild predators naturally traveling large distances outside of captivity will suffer further greater welfare compromise when prohibited from engaging in this highly motivated foraging behavior in their enclosures (Clubb and Mason, 2007). Other breeds were similarly developed for exaggerated expression of natural behaviors or their components, such as those involved in the predatory sequence (Coppinger and Coppinger, 2002), with often excessive motivation to perform certain behaviors (such as tracking, chasing, biting, or attacking) now perceived as “behavior problems” by pet owners. The growing popularity of and demand for certain high-drive working breeds has only exaggerated the incongruencies between such dogs and their physical environments, increasing these welfare concerns.

Though impossible to inventory, it is paramount to recognize the wealth of modern environmental elements to which dogs struggle to adapt and functionally interact as welfare-compromising features they are often biologically ill equipped to navigate (Arndt et al., 2022). Such common characteristics of the modern world as skyscrapers, elevators, cars, planes, buses, construction equipment, vacuum cleaners, televisions, computers, cell phones, appliances, etc. introduce pet dogs to a host of problematic stimuli for which they may have no natural adaptations. In addition to the inevitable exposure to such foreign conditions, many pet

dogs conversely lack accessibility to outdoor spaces and related behavioral opportunities, with little control over these interactions with nature given the restriction created by leashes and human demands for inhibition when outside.

Behavioral Interactions with other animals -

While the opportunity to socialize with other dogs has been clearly identified as a welfare requirement for contemporary canine companions - with some dogs benefitting from the community resources such as puppy socialization classes, dog parks, and daycares available in most major cities - the fundamental “pet” fallacies outlined in this discussion so far do often compromise the otherwise well-intentioned efforts of dog lovers in this regard. The prevailing over-simplification and reduction of the whole of the canine gene pool to that of “dogs” has led canine keepers to force unnatural social interactions with other dogs both inside and outside of the home, as many of the same diversified selective pressures previously identified influence the signaling, communication, perceptions, and even play styles of differing canine phenotypes. As dog owners may be led to believe that “good” dogs should actively enjoy affiliation with all other dogs (and further lack a comprehensive understanding of canine body language potentially indicating otherwise in their dog), stressful social interactions are frequently unnaturally forced between dogs both in and outside of their own home territory under the expectation that they “be nice”, “share”, and “play” with these “friends” without the expression of canine ritualized signaling, conflict resolution, or hazard avoidance responses such as growling, raising lips, or snapping. In light of the fact that “good animal welfare is guaranteed when the regulatory range of allostatic mechanisms matches the environmental demands” (Korte et al., 2007) for captive animals, the interruption and prevention of such normal communication is unfavorable.

Domestic dogs’ social needs being biologically somewhere between that of established family structures seen in their wolf ancestors and the loosely formed alliances observed in free roaming village dogs (made more complicated by artificial selection for diversification of social behavior), it can be challenging to successfully optimize these behavioral interactions. However, in most cases, dogs have been shown to benefit from having the companionship of at least one other conspecific in captive conditions (Hecker et al., 2024). When bonded to other dogs, the prevention of access to these social members for extended periods (as may result from practices such as crating) may cause distress and contribute to the development of separation/attachment related behavior problems widely exhibited by modern pet dogs (Beaver, 2024).

While some dogs may experience uncomfortable fleeting social interactions during walks or playdates or unstable social group conditions with incompatible conspecifics (which may ultimately include threatening or even dangerous altercations between house mates), others alternatively live as socially isolated animals

with little engagement with their own species. There are many cases in which dogs harmoniously interact and cohabitate with other canines and experience positive welfare benefits of interactions with other animals; yet the reduction of overarching agency and control in social events presents persisting welfare concerns, as human interference in normal communication and interactions between dogs may greatly reduce the development, value, and success of these experiences and skills for the life of a dog.

Behavioral Interactions with people -

As not only the responsible keepers but also the primary social companions for domestic pet dogs in many cases, humans bear a tremendous burden in carefully considering and approaching the dynamics between them and “man’s best friend”. Whether due to unhealthy attachment styles with humans to whose own poor mental health they have become neurologically synchronized (Dodman et al., 2018; Sundman et al., 2019), confusing or even traumatic experiences in the name of “obedience” training and other performances (McLean and McGreevy, 2010; Keay and Bandler, 2008; Martin et al., 2024), unwelcome affection or contact from children and strangers, or more extreme and clear cases of animal neglect and abuse - the ripples of potential negative welfare implications for behavioral interactions between modern canines and humans are far from simple to outline succinctly, yet permeate every layer of any welfare considerations for dogs as discussed. Despite our mostly good intentions towards our evolutionary sidekicks and the impervious growth of pet marketplace spending on dog products and services, the sad truth is that people are largely falling short in meeting the interactive needs of their pets. Both naturally and artificially selected to orient strongly towards human company, attention, and engagement in a multitude of ways, modern dogs are suffering the fallout of rapid environmental change that no longer fosters the behavioral purposes and close working relationships with people historically known to their species (Sonntag and Overall, 2014).

Mental State - welfare’s conclusion

As welfare is ultimately the domain of the animal - their own cumulative affective state reflecting the total of their life experiences - even a cursory accounting of the risk factors for modern pet dog welfare reveals significant sources of concern for a great number of these animals. The collective confusion, frustration, anger, overwhelm, loneliness, panic, boredom, depression, distress, anxiety, fearfulness, and pain that many dogs routinely experience in their pet lives as a result of certain deficits across the Five Domains of welfare are now reflected in the emerging data about pet dog behavior problems as welfare indices themselves (Beaver, 2024; Mellor, 2020). There is indeed a compounding welfare crisis as it relates to our canine companions, and so a need to completely reimagine their lives and our standard pet practices in order to see modern animal welfare science practically extended to our canine companions in optimizing all of their domains to support the rich expressions of natural behavioral diversity for a truly good life.

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