*Empirical Research Paper*

# Becoming Speciesist: How Children and Adults Differ in Valuing Animals by Species and Cognitive Capacity

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## Abstract

Children morally prioritize humans over animals less than adults do. Is this because children are less speciesist—meaning they place less moral weight on mere species membership? Or is it because they give less weight to differences in cognitive capacity between humans and other animals? We investigated this in two experiments, presenting children and adult participants in the United States and Spain with moral trade-off dilemmas. These dilemmas involved individuals who varied in species membership (human vs. monkey) and cognitive capacity. Across both cultures, children were less likely than adults to prioritize humans over animals, regardless of cognitive capacity. In addition, participants tended to prioritize individuals with higher cognitive capacities, regardless of species membership—though this effect was less robust in children. Our findings suggest that children in these Western contexts are indeed less speciesist than adults, though they do not rule out developmental changes in the moral weight assigned to cognitive capacity.

## Keywords

moral circle, moral judgment, speciesism, animals, cognitive capacity, children

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Most children have a fondness for nonhuman animals. They play with pets, cherish zoo visits, and adore animal characters like Peppa Pig or Clifford the Big Red Dog. Experimental research supports the notion that children place greater moral value on animals than adults do (e.g., Wilks, Caviola et al., 2021). What explains children's greater concern for animals? Are they applying different criteria than adults when determining which beings deserve moral consideration? If so, what are those criteria?

## The Perceived Moral Significance of Species Membership and Cognitive Capacity

Seeing humans as morally more important than all other animals is a defining feature of most moral systems across time and cultures (Caviola et al., 2019). This prioritization is evident in many domains of life. For instance, legal frameworks around the world grant robust protections to human life while offering animals comparatively minimal safeguards. Religious traditions commonly emphasize the special moral status of humans. Even in societies with close relationships to animals, such as ancient pastoral communities, animals have long been used for food, labor, and ritual, with such practices widely accepted as morally permissible. Perhaps most strikingly, the widespread consumption of animals—despite the availability of alternatives—illustrates the deeply entrenched belief that

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human interests outweigh those of animals. However, the basis for this view remains unclear.

One possibility is that people prioritize humans over other animals purely on the basis of species membership—an attitude that has been called "speciesism" by some authors (Horta, 2010; Singer, 1975). On this view, humans are more valuable than animals simply because they are humans. On an alternative view, humans matter more because they have unique features that animals lack. The most prominently cited features relate to greater, and distinctive, cognitive capacities, including the ability to reason or make rational decisions (cf. Cohen, 1986; Kant, 1785; cf. Warren, 2003). According to this view, humans hold greater moral significance not simply because they belong to the human species but because they have much greater cognitive capacities than other animals.

We focus on these two factors—species membership and cognitive capacity—because they consistently emerge as central criteria in both philosophical and psychological accounts of how people assign moral worth. Philosophers often distinguish between *who* a being is (e.g., a member of the human species) and *what* a being can do (e.g., reason, communicate, or exercise self-control; DeGrazia, 1996; Kagan, 2022; Singer, 1975; Warren, 2003). As most humans also possess cognitive capacities that distinguish them from other animals, these two factors typically go together. However, they in principle can, and in some cases do, come apart. In particular, at least some humans—for example, those with severe cognitive disability or advanced dementia—seem to lack many of the cognitive capacities distinctive of humans yet still seem to enjoy a much higher moral status than nonhuman animals (Kagan, 2022; Singer, 1975). Questions about the respective role of species membership and cognitive capacity in explaining, and perhaps justifying or undermining, the priority commonly assigned to humans over animals remain a key focus of heated debate in moral philosophy.

Research in moral psychology has echoed this focus, similarly finding that people rely on both identity-based (e.g., species) and capacity-based (e.g., cognitive) reasoning when making moral judgments (Caviola et al., 2019, 2021; Gray et al., 2007; Kozachenko & Piazza, 2021; Piazza et al., 2014). Moreover, from an evolutionary perspective, prioritizing members of one's own species may have conferred adaptive advantages by promoting kinship bonds, group cohesion, and reciprocal cooperation (Boyd & Richerson, 2005; Tomasello, 2014). At the same time, attending to cognitive traits like intelligence, communicative ability, or goal-directed behavior in others may have helped early humans identify agents with the capacity for alliance—or for deception and threat (Cosmides & Tooby, 1992). These two dimensions—species membership and cognitive capacity—thus likely reflect deep-rooted heuristics for identifying socially relevant beings.

To test whether people prioritize humans over animals based on species membership alone, one has to systematically disentangle species membership from other factors, such as cognitive capacity, that typically correlate with belonging to a certain species. Experiments with adults have done exactly that, revealing that adults prioritize humans over animals based on mere species membership, even when cognitive capacity is controlled for (Caviola et al., 2021, 2022). For example, when presented with a human and a chimpanzee of equal cognitive capacity and sentience, most adults still prioritize the human. This tendency persists even in extreme cases where the chimpanzee is presented as clearly having higher cognitive capacity than (but the same sentience level as) the human. This suggests that judgments about cognitive capacity cannot fully explain the different moral weights we grant to humans and animals. Put another way, it suggests that adults are, at least partially, speciesist in the sense explained above. It is plausible that other factors, such as appearance or perceived vulnerability, could also play a role. However, in this study, we focus solely on species membership and cognitive capacity—arguably the most prominent factors highlighted in ethical and public debates about the treatment of nonhuman animals.

While adults do appear to have speciesist tendencies, they also value higher cognitive capacity. For example, adults tend to prioritize more cognitively capable animals over less cognitively capable animals of the same species (Caviola et al., 2022). They also tend to prioritize humans over animals more strongly when they see the humans as having much higher cognitive abilities than the animals. Thus, it seems that adults exhibit both tendencies: While they do often prioritize humans over animals based on species membership alone, they nevertheless also attribute a degree of moral weight to cognitive capacity levels.

## The Developmental Shift in Perceptions of Human Moral Superiority Over Animals

Several empirical findings demonstrate children's greater concern for animals. When presented with hypothetical, direct trade-off scenarios, most children between the ages of 5 and 9 choose to save 10 dogs over one human, whereas most adults prioritize the human over even 100 dogs (Wilks, Caviola et al., 2021). This pattern of children valuing animals more than adults also extends to pigs (Wilks, Caviola et al., 2021) and monkeys (Paruzel-Czachura et al., 2025) and manifests in both U.S. and Polish participants. Notably, these effects persist despite children and adults perceiving animals and humans as having the same absolute and relative levels of sentience and cognitive capacity (Wilks, Caviola et al., 2021). Research also demonstrated that children are less likely to categorize farmed animals as food (McGuire, Palmer, & Faber, 2023) and show greater moral concern than

adults when reasoning about eating animals (McGuire, Bagus, et al., 2025; McGuire, Fry, et al., 2023). When asked directly, a majority of children judged physical violence against animals as more morally wrong than hurting another child (Hussar & Harris, 2018). Children's moral concern for animals appears stronger in younger children than older ones. For example, when asked to report how much they care about a range of individuals, 5-year-old children typically placed a greater number of animals at the center of their moral circle, whereas 10-year-old children placed more humans at the center while placing animals toward the outskirts (Neldner et al., 2018, 2023), and during adolescence people even tend to particularly morally downgrade animals (McGuire, Fry, & Faber, 2025).

## The Present Research

Why do children show greater moral concern for animals than adults do? Existing research has yet to answer this question. While some studies suggest that children consider perceived cognitive capacity when attributing moral concern to animals (Kozachenko & Piazza, 2021, 2024; Neldner & Wilks, 2022), no developmental research has systematically examined how children assess moral concern when both species membership and cognitive capacity are manipulated simultaneously.

In this article, we present two experiments that systematically vary species and cognitive capacity to isolate their influence on moral judgment. Specifically, children and adults made decisions in hypothetical prioritization dilemmas involving saving monkeys versus humans.

This study design allows us to disentangle the following hypotheses. First, children may value cognitive capacities to the same extent as adults but exhibit a weaker speciesist tendency—meaning they have a weaker tendency to prioritize humans over animals based on mere species membership (*late speciesism hypothesis*). Alternatively, children may be just as speciesist as adults but place less emphasis on higher cognitive capacities when making moral judgments (*late higher cognitive capacity valuing hypothesis*). Finally, children, unlike adults, might assign greater moral worth to beings that have lower cognitive capacities compared with other beings, perhaps because they perceive them as particularly vulnerable (*early lower cognitive capacity valuing hypothesis*).

If children and adults prioritize equally cognitively capable animals and humans in the same way, this would rule out the late speciesism hypothesis and support the late higher cognitive capacity valuing hypothesis. Conversely, if children continue to show a weaker tendency to prioritize humans over animals, even when both individuals are equally cognitively capable, this would rule out the late higher cognitive capacity valuing hypothesis and support the late speciesism hypothesis. Finally, if children maintain or even increase their relative valuation of animals when an animal's cognitive capacities are raised (while the human's cognitive capacities remain constant), this would rule out the early lower capacity valuing hypothesis.

We conducted our experiments in both the United States and Spain to assess whether the findings generalize across different Western cultures or whether cultural differences—such as dietary norms (e.g., the greater prevalence of vegetarianism in the United States vs. the cultural significance of jamón in Spain) or relationships with animals (e.g., the popularity of bullfighting in Spain vs. pet ownership trends in the United States)—influence moral judgment. We worked with children aged 6 to 10, as past research suggests this age group exhibits lower speciesist tendencies than adults (Wilks, Caviola et al., 2021) while also considering cognitive capacity when making moral judgments about animals (Kozachenko & Piazza, 2021).

## Study 1: U.S. Samples

### Method

*Participants.* Our total sample comprised 122 U.S. participants: 64 American adults recruited through Prolific (31 men, 32 women, $M_{age}$ = 37.08, $SD_{age}$ = 14.46, age range: 18–79) and 58 American children (30 boys, 28 girls, $M_{age}$ = 6.71, $SD_{age}$ = 1.32, age range: 6–10) recruited from a university database. Children were tested online via Zoom between June and August 2021. The study was preregistered (https://aspredicted.org/YTP_XYL).

*Procedure.* Trained research assistants read aloud the instructions to each of the children in Study 1, while a slightly adjusted text version was presented to adults on Prolific (see Supplementary Materials for the exact script for each group).

First, participants were presented with a story. In the story, a magical snowfall from long ago randomly altered the cognitive capacity of both humans and monkeys, causing some to become much smarter and others to become significantly less cognitively capable. Over generations, the descendants of these humans and monkeys inherited these changes, resulting in a world where some individuals—both human and monkey—are exceptionally cognitively capable while others are not.

For clarity, participants were shown an abstract image containing purple and green people and monkeys. They were informed that the green-colored person and monkey were both really smart, possessing the ability to think in a clever way, speak, solve difficult puzzles, and plan for the future; they were also told the green-colored person and monkey were exactly equally smart. Similarly, they were informed that the purple-colored person and monkey were both less smart—unable to speak, solve difficult puzzles, or plan for the future—and were told that they were equally less smart. The colors were counterbalanced across participants. In addition, participants were informed that both the really

smart and less smart people and monkeys all had an equal capacity to experience emotions and physical pain, regardless of their cognitive capacity or species, and that all of the people and monkeys in question could easily survive on their own. We ensured participants understood the details of this story with four comprehension checks; children or adults who failed any of these questions a second time (after being corrected once) were ultimately excluded from analyses (see Supplementary Materials for exact question text).

After being presented with the story and survey instructions, participants responded to eight moral dilemmas. Six of these dilemmas involved a direct choice between two hypothetical individuals, where only one could be saved—a method successfully employed by Wilks, Caviola et al. (2021). The individuals in these scenarios were both humans, both monkeys, or a human and a monkey, with varying levels of cognitive capacity. Before each dilemma, participants were given the following prompt: *There are two boats here. Both of these boats are sinking. Unfortunately, no one on either of the boats is able to swim. But you can pick one boat to save.* Participants then made their decision by selecting one of three options, arranged from left to right: saving the former individual (coded as –1), choosing "cannot decide" (coded as 0), or saving the latter individual (coded as 1). As these three choices reflect a logical continuum of preferences or tendencies, we will treat them as an interval scale consistent with previous research using similar dilemmas (Wilks et al., 2021).

The dilemmas shown to participants were (a) really smart person versus less smart monkey (i.e., the realistic case), (b) really smart person versus really smart monkey, (c) really smart monkey versus less smart person, (d) less smart person versus less smart monkey, (e) really smart person versus less smart person, and (f) really smart monkey versus less smart monkey.

Participants were also asked two additional questions. First, in an attention check question, participants chose whether to save one person or 10 plates; participants who chose the plates were excluded from the analyses. Second, participants were presented with an additional dilemma asking them to save either a really smart person or a super smart monkey with greater cognitive capacity than any person would have. The above dilemmas (including the attention check) were presented in randomized order, besides the additional super smart monkey dilemma, which was always presented last. The visual location of the options (left/right) was also counterbalanced.

After completing all eight moral dilemmas, participants responded to the Speciesism Scale (Caviola et al., 2019; McGuire, Palmer, et al., 2023), which included statements like "Morally, animals always count for less than humans." Results from this measure are reported in the Supplementary Materials. Participants also answered demographic questions—children provided their age and gender, while adults reported their age, gender, education level, and political orientation. Children received either a small toy (if tested in person on the university campus) or a $5 Amazon gift card (if tested via video call), while adults were paid $2 for completing the survey via Prolific.

*Open Science.* Reports of all measures, manipulations, and exclusions, as well as all data, analysis code, and experimental materials for all studies are available for download at https://osf.io/htu2d/.

### Results

First, we examined the inter-species dilemmas. Consistent with previous research (Wilks, Caviola et al., 2021), children were less likely than adults to prioritize humans over animals (see Table 1 for statistics and Figure 1 for choice percentages). This pattern persisted across scenarios where the cognitive capacity levels of the person and monkey varied: whether the monkey was much more cognitively capable than the person, equally cognitively capable, or less cognitively capable. For example, children were less likely than adults to prioritize a really smart person over either a less smart monkey (i.e., the "realistic" case) or an equally smart monkey. Even in the scenario where the monkey was "super smart" (more cognitively capable than any person), children prioritized the person less often than adults did. Furthermore, children were less likely than adults to prioritize a less smart person over a less smart monkey, and while they were also less likely to prioritize a less smart person over a really smart monkey, this effect was not statistically significant.

Next, we examined the intra-species dilemmas. Here, children were less likely than adults to prioritize a really smart individual over a less smart individual. This was true for both the human and monkey intra-species comparisons (see Supplementary Materials for full analyses). Adults significantly prioritized the really smart person over the less smart person, $t(63) = –6.77$, $p < .001$, $d = 0.84$, as well as the really smart monkey over the less smart monkey, $t(63) = –6.69$, $p < .001$, $d = 0.84$. In contrast, children did not show a significant tendency to prioritize the really smart being over the less smart being in either the person, $t(57) = 0$, $p = 1$, or monkey comparisons, $t(57) = –1.63$, $p = .11$, $d = 0.21$.

All key results remained significant after applying Bonferroni corrections for multiple comparisons (see Supplementary Materials section 1.7). This includes the core findings that U.S. adults were more speciesist than U.S. children and that adults prioritized higher cognitive capacity more than children. No preregistered comparisons lost significance after correction.

## Study 2: Spanish Samples

In Study 2, we aimed to replicate our results in adult and children samples from Spain. Our aim was to investigate whether the patterns of results are robust across these two

**Table 1.** Mean Choices of U.S. Children and U.S. Adults (Study 1).

| Comparison | Adults | Children | *t* value | *p* value | *d* |
|---|---|---|---|---|---|
| Really Smart Person vs. Less Smart Monkey | -0.77 (0.50) | 0.12 (0.92) | 6.53 | < .001 | 1.22 |
| Really Smart Person vs. Really Smart Monkey | -0.62 (0.55) | -0.14 (0.76) | 4.02 | < .001 | 0.74 |
| Really Smart Person vs. Super Smart Monkey | -0.20 (0.84) | 0.41 (0.84) | 4.06 | < .001 | 0.74 |
| Less Smart Person vs. Less Smart Monkey | -0.58 (0.61) | 0.03 (0.84) | 4.57 | < .001 | 0.84 |
| Less Smart Person vs. Really Smart Monkey | -0.16 (0.86) | 0.05 (0.93) | 1.28 | .202 | 0.23 |
| Really Smart Person vs. Less Smart Person | -0.50 (0.59) | 0.00 (0.90) | 3.95 | < .001 | 0.66 |
| Really Smart Monkey vs. Less Smart Monkey | -0.52 (0.62) | -0.19 (0.89) | 2.33 | .022 | 0.43 |

*Note.* Participants' responses were recoded so that –1 always indicates saving the former individual (the person or the more cognitively capable individual), 0 indicates "can't decide," and 1 indicates saving the latter individual (the monkey or the less cognitively capable individual). Negative scores reflect a stronger preference for saving the person over the monkey (or the more cognitively capable individual), while positive scores reflect a stronger preference for saving the monkey over the person (or the less cognitively capable individual). The values under the "Adults" and "Children" columns represent mean recoded choices, with standard deviations shown in parentheses. Interspecies comparisons (assessing speciesism) are highlighted in green, while intraspecies comparisons (assessing discrimination based on cognitive capacity) are highlighted in yellow. All *t* values use 120 degrees of freedom.

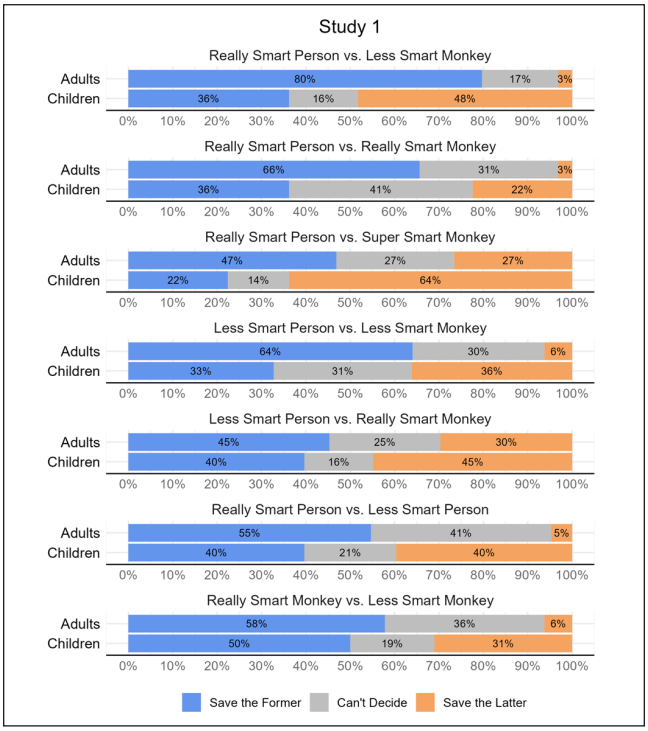


**Figure 1.** The Percentage of Children and Adults in Study 1 Choosing to Save the Former Individual (A Person or Smarter Individual; Blue) Over the Latter Individual (Monkey or Less Smart Individual; Orange).

Western cultures. The design mirrored that of Study 1 but included six additional dilemmas that involved comparing one being against five beings. The purpose of these additional dilemmas was to introduce a third factor (small vs. large number of individuals) to amplify the contrast between the cognitive capacity and species factors.

## Method

*Participants.* Our total sample comprised 185 Spanish participants: 91 Spanish adults (52 women, 38 men, $M_{age}$ = 34.09, $SD_{age}$ = 12.65, age range: 18–67) and 94 Spanish children (52 girls, 42 boys, $M_{age}$ = 8.47, $SD_{age}$ = 0.89, age range: 6–10). Both samples were recruited via convenience sampling and tested in person at local parks and a primary school. The study was preregistered (https://aspredicted.org/THJ_HVB).

*Procedure.* The procedure in Study 2 closely mirrored that of Study 1, with all materials translated into Spanish using the standard back-translation method (Brislin, 1970), in which materials are translated into the target language and then independently translated back into the original language to check for consistency and accuracy. Participants were told the same story about magical snow affecting the cognitive capacity of humans and monkeys who lived long ago and were asked identical comprehension check questions as in Study 1. As in Study 1, any participant who failed a comprehension check question twice (providing an incorrect answer after failing once and being corrected) was excluded. After completing all instructions and comprehension checks, participants were asked which being or group of beings they would save in hypothetical moral dilemmas, either pitting humans against monkeys or more cognitively capable beings against less cognitively capable beings of the same species.

**Table 2.** Mean Choices of Spanish Children and Spanish Adults (Study 2).

| Comparison | Adults | Children | *t* value | *p* value | *d* |
|---|---|---|---|---|---|
| Really Smart Person vs. Less Smart Monkey | -0.71 (0.50) | -0.27 (0.93) | 4.10 | < .001 | 0.60 |
| Really Smart Person vs. Really Smart Monkey | -0.60 (0.56) | -0.18 (0.93) | 3.78 | < .001 | 0.55 |
| Really Smart Person vs. Super Smart Monkey | -0.09 (0.86) | 0.45 (0.89) | 4.15 | < .001 | 0.61 |
| Less Smart Person vs. Less Smart Monkey | -0.56 (0.58) | -0.22 (0.93) | 2.97 | .003 | 0.43 |
| Less Smart Person vs. Really Smart Monkey | -0.16 (0.85) | 0.19 (0.93) | 2.73 | .007 | 0.40 |
| Really Smart Person vs. Less Smart Person | -0.37 (0.63) | -0.31 (0.89) | 0.58 | .565 | 0.08 |
| Really Smart Monkey vs. Less Smart Monkey | -0.48 (0.64) | -0.34 (0.89) | 1.26 | .209 | 0.18 |
| Really Smart Person vs. 5 Less Smart Monkeys | -0.15 (0.93) | -0.04 (0.96) | 0.80 | .424 | 0.12 |
| Really Smart Person vs. 5 Really Smart Monkeys | 0.16 (0.90) | 0.37 (0.92) | 1.56 | .121 | 0.23 |
| Less Smart Person vs. 5 Less Smart Monkeys | 0.01 (0.91) | 0.24 (0.96) | 1.70 | .091 | 0.25 |
| Less Smart Person vs. 5 Really Smart Monkeys | 0.24 (0.90) | 0.48 (0.86) | 1.83 | .069 | 0.27 |
| Really Smart Person vs. 5 Less Smart People | 0.53 (0.75) | 0.17 (0.96) | 2.83 | .005 | 0.41 |
| Really Smart Monkey vs. 5 Less Smart Monkeys | 0.48 (0.82) | 0.06 (0.98) | 3.16 | .002 | 0.46 |

*Note.* Participants' responses were recoded as follows: –1 indicates saving the former individual (a person or the smarter individual), 0 indicates "can't decide," and 1 indicates saving the latter individual(s) (monkey [or the less smart individual(s)]). Negative scores reflect a greater preference for saving the person over the monkey(s) (or the more cognitively capable individual), while positive scores reflect a greater preference for saving the monkey(s) over the person (or the less cognitively capable individual). The values in the "Adults" and "Children" columns represent mean recoded choices, with standard deviations shown in parentheses. Interspecies comparisons (assessing speciesism) are highlighted in green, while intraspecies comparisons (assessing discrimination based on cognitive capacity) are highlighted in yellow. All *t* values use 183 degrees of freedom.

The primary difference between Study 1 and Study 2 is that Study 2 added six additional tasks for a total of thirteen dilemmas rather than seven. In these additional dilemmas, participants chose whether to save one person (or smarter individual) or five monkeys (or less smart individuals). We included these to explore whether the effects observed in the 1-vs-1 scenarios would also appear in dilemmas where the less popular type of individual (e.g., animals or lower cognitive capacity) contains a larger number of such individuals.

The dilemmas shown to participants are displayed in the column names of Table 2. The dilemmas included the same seven 1-vs-1 scenarios as in Study 1. In addition, there were six 1-vs-5 scenarios: one really smart person vs. five less smart monkeys, one less smart person vs. five really smart monkeys, one really smart person vs. five really smart monkeys, one less smart person vs. five less smart monkeys, one really smart person vs. five less smart people, and one really smart monkey vs. five less smart monkeys. As in Study 1, participants were asked an additional attention check question in which they chose whether to save one person or 10 plates. All the dilemmas were presented in randomized order, with the visual location (left/right) of beings or groups of beings counterbalanced.

After responding to all moral dilemmas, adult participants completed the Spanish adaptation of the Speciesism Scale (Caviola et al., 2019; Suárez-Yera et al., 2021) and responded to the same demographic questions as in Study 1. Results from the Speciesism Scale are reported in the Supplementary Materials. Children were given a small prize (dinosaur gel pen). No incentives were given to adults.

## Results

First, we examined the interspecies dilemmas. Study 2 replicated the finding that children showed a significantly weaker tendency than adults to prioritize humans over monkeys in interspecies 1-vs-1 dilemmas (see Table 2 for statistics and Figure 2 for choice percentages). Children were less likely than adults to save a less smart person over both a really smart monkey and a less smart monkey. They were also less

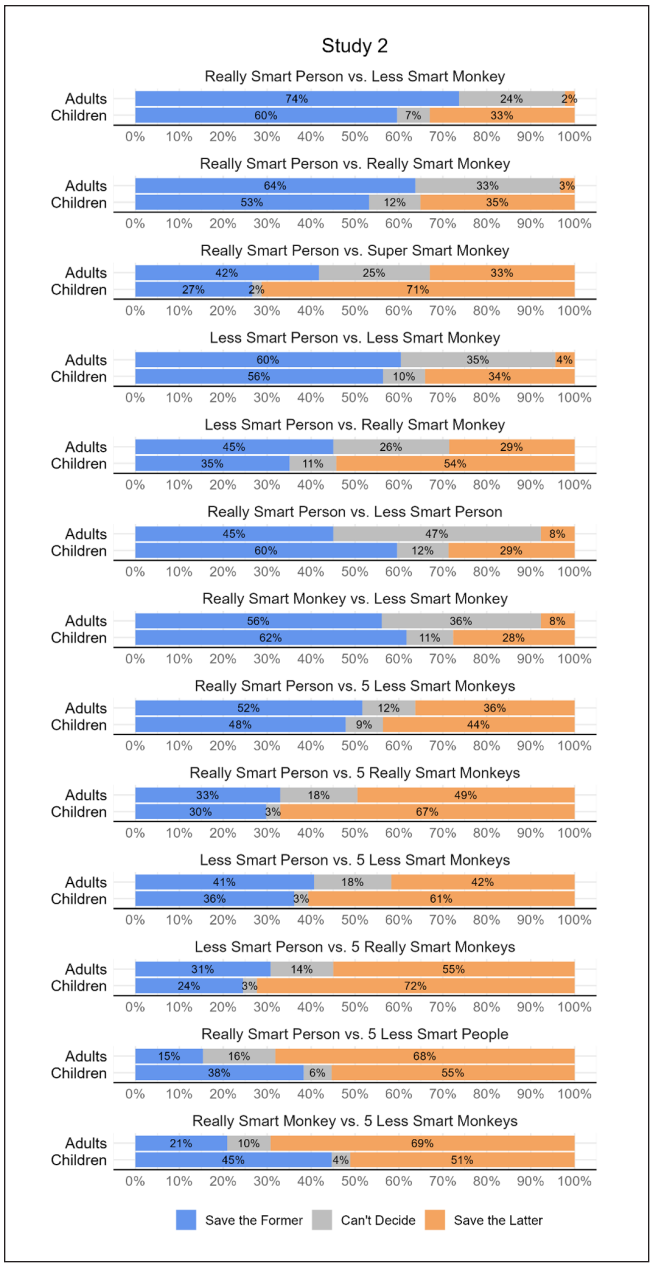


**Figure 2.** The Percentage of Spanish Children and Adults in Study 2 Choosing to Save the Former Individual (Person or Smarter Individual; Blue) Over the Latter Individual(s) (Monkey(s) or Less Smart Individual(s); Orange).

likely to save a really smart person over both a really smart monkey and a less smart monkey. Finally, children were much more likely than adults to save a super smart monkey—whose cognitive capacity exceeded any human's—over a really smart human. In the four interspecies 1-vs-5 dilemmas, there were no significant differences between adults and children. However, descriptively, children showed a weaker tendency than adults to save the one person over the five monkeys in all four dilemmas.

Next, we examined the intraspecies dilemmas. Both adults and children showed a significant tendency to prioritize the smarter individual over the less smart one in both the human–human and monkey–monkey dilemmas ($p < .001$ in all cases; see Supplementary Materials for full analyses). Although there was no significant difference between children's and adults' responses in these 1-vs-1 intraspecies dilemmas (unlike in Study 1; see Table 2), children still exhibited a descriptively weaker tendency to prioritize the smarter individual. The pattern differed for the intraspecies 1-vs-5 dilemmas. Adults showed a significant tendency to prioritize the larger number of less smart individuals over the one really smart individual in both the dilemmas featuring humans, $t(90) = 6.71$, $p < .001$, $d = 0.70$, and monkeys, $t(90) = 5.62$, $p < .001$, $d = 0.59$. In contrast, children did not exhibit this tendency, with nonsignificant results in both the dilemmas featuring humans, $t(93) = 1.72$, $p = .09$, $d = 0.18$, and monkeys, $t(93) = 0.63$, $p = .53$, $d = 0.07$.

All key results supporting our main conclusions remained significant after Bonferroni corrections (see Supplementary Materials section 2.7). However, a few comparisons—mostly involving children's responses to dilemmas featuring less cognitively capable or multiple individuals—lost significance after correction. These changes do not affect the main conclusions regarding developmental differences in speciesism or sensitivity to cognitive capacity.

## General Discussion

In this article, we investigated whether children's greater concern for animals stems from a weaker speciesist bias or a lower emphasis on cognitive capacity. By examining scenarios where species and cognitive capacity diverged, we found that while both children and adults generally prioritize humans, children do so to a lesser extent. Notably, even when animals possessed cognitive capacities equal to or greater than humans, both U.S. and Spanish children were still less likely than adults to prioritize humans. This suggests that children place less moral weight on species membership alone. In other words, our findings indicate that children are less speciesist than adults.

### *Children Value Mere Species Membership Less Than Adults Do*

Connecting our findings to the hypotheses outlined in the introduction, our results support the *late speciesism hypothesis*. The strongest evidence comes from the 1-vs-1 interspecies dilemmas, where adults in both the United States and Spain prioritized humans over monkeys more than children did, regardless of cognitive capacity. At the same time, these findings contradict the *late higher cognitive capacity valuing*

*hypothesis* in its strict form, as it would predict no age-related differences in how equally capable humans and animals are valued.

Two direct tests of speciesism come from the comparisons of "really smart person vs. really smart monkey" and "less smart person vs. less smart monkey." The beings in both of these dilemmas were described as equally cognitively capable, equally capable of pain and pleasure, and equally able to survive on their own. But despite this, both U.S. and Spanish adults strongly prioritized saving the person over the monkey in both instances. By contrast, U.S. and Spanish children either did not prioritize saving the person over the monkey or had a weaker tendency to do so.

### *Both Children and Adults Value Higher Cognitive Capacity*

We also found that both children and adults tended to prioritize more cognitively capable individuals over those with lower cognitive capacity. This directly contradicts the *early lower capacity valuing hypothesis*, which would predict that children should assign less value to animals as their cognitive capacities increase.

To explore this, we can compare children's and adults' responses in the 1-vs-1 intraspecies dilemmas (i.e., trade-offs where the only difference between beings is their cognitive capacity level, such as "really smart monkey vs. less smart monkey"). For both U.S. and Spanish participants, we found that adults clearly prefer to prioritize the more cognitively capable over the less cognitively capable individual of the same species. While children also showed this preference, it was significantly weaker than those of U.S. adults, though not of the Spanish adults.

We can also compare responses across interspecies dilemmas to infer how children and adults weigh cognitive capacity. This is in particular useful if two dilemmas pit the same type of individuals against each other with the only difference being that one individual has a different cognitive capacity level. For instance, we can compare participants' responses in the "really smart person vs. less smart monkey" dilemma to their responses in the "really smart person vs. really smart monkey" dilemma to see whether participants have a weaker tendency to save the person when the monkey is more cognitively capable. We describe these analyses in more detail in the Supplementary Materials sections 1.3 and 2.3. We generally find that participants' tendency to prioritize one individual over one (or five) others changes if the cognitive capacity level of one type of individual changes (but all other factors are held constant). Specifically, we find that Spanish children and adults both prioritize more cognitively capable individuals over less cognitively capable individuals and that they do so to similar degrees. We also find that while U.S. adults similarly prioritize more cognitively capable individuals, U.S. children had a weaker tendency (compared with U.S. adults) to prioritize more cognitively capable individuals (cf. Kozachenko & Piazza, 2024).

Overall, both types of analyses described above support the view that adults and children tend to value higher cognitive capacity. This tendency seems roughly equally strong in adults and children, although there is weak evidence that U.S. children are more egalitarian with regard to cognitive capacity. It is possible, therefore, that children may be less inclined than adults to associate higher cognitive capacity with higher moral status. We consider this an area for future investigation.

Moreover, we did not find any clear difference in how strongly participants (both children and adults) valued cognitive capacity as a function of species category—that is, whether they prioritized cognitive capacity more or less in humans or monkeys (see Supplementary Materials sections 1.4 and 2.4). This is noteworthy given that previous studies found weak, albeit nonrobust, evidence suggesting adults have a stronger tendency to prioritize cognitive capacity in animals compared with humans (Caviola et al., 2022). Other work suggests that children, but not adults, differentially prioritize cognitive capacity information when making moral judgments about different categories of animals (Kozachenko & Piazza, 2024). Future research is needed to tease apart the nuances of how perceived cognitive capacity may interact with species membership.

### *Developmental Trends Across U.S. and Spanish Cultures*

The key findings were relatively stable across the two countries (Supplementary Materials section 3.2). That is, U.S. adults provided roughly the same responses as Spanish adults, and U.S. children provided roughly the same responses as Spanish children. Furthermore, the differences between adults and children showed similar patterns in the United States and Spain. This is in line with a previous study that showed that Polish children also have a weaker tendency to prioritize humans over animals than Polish adults do (Paruzel-Czachura et al., 2025). Given that these cultures are all relatively similar (e.g., Western), these findings do not rule out that moral attitudes toward animals could differ widely in different (e.g., non-Western) cultures. We consider understanding the effect of culture on the development of our speciesist tendencies an important direction for future research.

### *Limitations and Future Research*

While we manipulated two key factors that are widely taken to be important in shaping moral judgments—species and cognitive capacity—we did not account for other factors that could also plausibly impact such judgments. These include perceived goodness (Neldner & Wilks, 2022), harmfulness

(Piazza et al., 2014), disgustingness (Kozachenko & Piazza, 2021), vulnerability (Hussar & Harris, 2018), similarity to humans (Miralles et al., 2019), lifespan, and wellbeing. We encourage future research to systematically investigate the relative impact of these additional factors on children's and adults' moral attributions.

One open question is whether children or adults view beings with low cognitive capacities as being more vulnerable and whether this, in turn, affects their moral judgements. In our study, we attempted to control for perceived vulnerability by explicitly stating that all individuals—regardless of cognitive capacity—were equally incapable of helping themselves. Overall, our findings do not support the hypothesis that children assign greater moral weight to animals because they view them as more vulnerable due to lower cognitive capacities. In particular, we generally found that both children and adults prioritized beings with higher cognitive capacities. However, one finding raises the possibility that perceived vulnerability may still play a role in children in particular. In Study 1, U.S. children were slightly more likely (although not statistically significantly) to prioritize a less cognitively capable monkey over a highly cognitively capable human than they were to prioritize a highly cognitively capable monkey over that same human. This might suggest that they perceived the less cognitively capable monkey as especially vulnerable. That said, this pattern was not replicated in Study 2 with Spanish children, nor was it observed in the analogous comparison involving a super smart monkey. Thus, while our study was not designed to test vulnerability directly, and our results overall do not support a simple vulnerability-based explanation, we cannot rule out that perceived vulnerability may have influenced some decisions. More broadly, it is likely to be a relevant factor in real-world moral judgments. Supporting this, prior research suggests that children judge moral transgressions against animals as more severe than those against humans, potentially because they see animals as especially vulnerable (Hussar & Harris, 2018). We hope future research will more directly examine how perceived vulnerability interacts with cognitive capacity, species membership, and cultural context in shaping moral concern—for example, by experimentally manipulating perceptions of vulnerability across different cultural settings.

Another direction for future work is to examine the role of emotional proximity and early exposure to animals. Children frequently form close bonds with pets, visit zoos, and watch media that portrays animals as lovable, emotionally rich beings. Such experiences may contribute to stronger emotional connections with animals, potentially shaping their moral preferences in favor of animals over humans. This may contribute to developmental differences in moral prioritization. Future studies could investigate whether the frequency or emotional intensity of child–animal interactions predicts moral concern for animals.

A limitation of our studies is the reliance on hypothetical dilemmas, which may not fully reflect real-world attitudes or behaviors. The artificial dilemmas used in our studies might have confounding factors or fail to accurately reflect people's attitudes. It is also possible that children might generally be more inclined to take an egalitarian approach toward both options presented in such dilemmas, regardless of the specific features of the options (Marshall & Wilks et al., 2025). In addition, variation in sampling and procedures (e.g., online surveys for adults vs. face-to-face or Zoom testing for children) may have influenced responses due to factors like social desirability or context, impacting comparability. Future research could address this by standardizing methods across groups.

The lack of significant differences between children and adults in the 1-vs-5 interspecies dilemmas is difficult to interpret. These dilemmas involve trade-offs between three factors: cognitive capacity, species category, and the number of individuals. These factors may interact in nonlinear ways, and these interaction effects could differ between adults and children. While it is beyond the scope of the current study to provide insight here, we think it would be valuable to explore in future research.

## Conclusion

Children in our U.S. and Spanish samples were less likely than adults to prioritize humans over animals, even when both had the same cognitive capacity. This suggests that speciesism—the tendency to favor individuals solely based on species membership—strengthens as children grow older and transition into adulthood.


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## Data Availability Statement

Reports of all measures, manipulations, and exclusions, as well as all data, analysis code, and experimental materials for all studies are available for download at https://osf.io/htu2d/.

## Supplemental Material

Supplemental material is available online with this article.

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