

Animal Depictions in Baby Picture Books: Focusing on Food, Clothing, and Shelter

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Abstract: Infants acquire various visual information from picture books. Picture books frequently feature animals, which are considered an important part of child development. This study quantitatively analyzed the depictions of animals in 669 baby picture books, focusing on their food, clothing, and shelter, and discussed the images that the authors had about animals, as well as the images and knowledge they might impart to infant readers. Mammals, such as rabbits and cats, appear in many baby picture books, with baby talk and onomatopoeia. Anthropomorphic rabbits and bears were particularly common among the clothed animals. Many animals were barefoot, and their body color was most often realistic. Anthropomorphic animals often prepared or consumed unrealistic food and drink using utensils. There were links between certain animals and food, including rabbits and carrots, cats and fish, dogs and bones, and bears and honey. A few illustrations of food were identified that should be given with caution or should not be given at all to real animals. Depictions of predation by carnivores and cruelty are avoided. Most animals were depicted without dwelling places. Rabbits and bears often appeared as anthropomorphic animals with their own houses. Cats and dogs were often depicted in humans' homes, with cats being indoors and dogs in the garden. The authors depict many animals that are known and loved by children in consideration of infants who are acquiring language skills and their perception of the external world. The images held by the authors reflect the human-animal relationships; however, sometimes, they do not necessarily correspond to the actual ecology of animals. Baby picture books that advance the developmental process of infants would effectively convey the appropriate images and knowledge about animals to readers. Greater attention to animal expressions in picture books will help create better picture books with respect to children's perception of animals, which may improve human-animal interactions.

Keywords: Anthropomorphic Animals, Baby Picture Books, Child Development, Depictions of Animals, Human-Animal Interactions

1. Introduction

1.1. Children and Picture Books

Children begin to enjoy picture books from approximately 10 months of age [1]. Studies have shown that picture books impact child development; they are effective for learning language, biological facts and concepts, problem-solving, and morality [2]. They help children establish life consciousness, such as empathy and consideration [3] and promote personality and social development [4]. Furthermore, compared to television, picture books are more useful for unlocking the imaginative potential of children because they

can view picture books at their own pace. Thus, imagination induced by picture books is conducive to children's intellectual and emotional development [5].

The benefits of picture books are widely recognized in the field of childcare. For example, the childcare guidelines from the Ministry of Health, Labour, and Welfare, Japan [6] state that children develop interest and curiosity in familiar objects in the presence of familiar household utensils, toys, and picture books and observe objects of various colors and shapes and picture books with caregivers and other staff. Thus, it is recommended that children be daily exposed to picture books, and there are many opportunities for children to become familiar with picture books from babyhood.

1.2. Baby Picture Books

It is commonly accepted that baby picture books are for 0–2-year-olds [7]. These books often show familiar objects [8], for example, food, drinks, animals, familiar games such as peekaboo, and daily routine activities such as eating and sleeping. Moreover, there are picture books on facial expressions [8] because newborns innately prefer visual stimuli related to faces [9]. Sonoda [10] investigated the words describing animals in 57 baby picture books and identified that the frequency of occurrence of baby talk, including the addition of the suffixes *san*, *kun*, and *chan*; repetition of common names; and onomatopoeia was higher than in words used by adults.

1.3. Infant Development

Infants obtain visual information from picture books. The colors of the illustrations are a significant factor in stimulating infants' senses and developing their imagination [1]. By four months of age, infants have trichromatic color vision equivalent to that of adults [11]. At five months of age, they utter the picture of a cat on the cover of a picture book, suggesting that they understand the meaning of pictures [12]. At six months old, they can identify faces of humans and animals [13]. Infants begin to recognize objects of their interest from the age of nine months onward and point to illustrations in picture books [14]. These facts indicate that images in baby picture books are significant elements for children to perceive and have interest in the world.

1.4. Infant–Animal Relationships

Children are attracted to animals from an early age. Four-month-olds prefer the visual stimuli of animals to that of objects [14]. Moreover, they prefer animals to toys, the risks notwithstanding [15]. Studies show that contact with animals has various benefits for child development. Rearing pets enhances children's self-esteem, empathy, and cognitive abilities [16], as well as promotes understanding of the significance of life and compassion [17].

Children may encounter animals directly or indirectly [18]. Direct encounters include keeping pets at home and observing and interacting with animals at zoos. Indirect encounters include encounters through a medium, such as picture books, which frequently depict animals [19]. For infants, therefore, picture books are a significant medium because they often facilitate their first encounter with animals.

Studies indicate that depiction of animals in picture books may influence children's mental images and knowledge about animals. Particularly, children in urban areas are more susceptible to the influence of picture books and other media because they lack early direct exposure to various animals [20]. Thus, picture books could promote healthy human–animal interactions. Positive effects include infants' mental image of veterinary medicine, their concern for animal welfare, empathy for animals, interest in nature and conservation, and knowledge of ethology, zoology, pet keeping, and nutritional values of animal products. However,

picture books may also have negative effects by inducing inappropriate behaviors in children, leading to contracting zoonotic diseases, bite accidents, and abuse of animals [21, 22]. Waxman et al. [23] showed that encyclopedias depicting bears from biological perspectives led five-year-olds to biological thinking, whereas picture books depicting bears anthropomorphically led them to human-centered thinking. Therefore, it is significant to analyze the depictions of animals in baby picture books.

1.5. Infants and Food, Clothing, and Shelter

Food, clothing, and shelter are three basic human needs [24], and humans naturally feel peaceful in an environment where they are available [25]. Moreover, their provision is crucial in childcare [26]. Depictions of food and drink are particularly interesting to infants [1]. A study of preferences for hats and T-shirts in children aged 2–3 years revealed their interest in clothing based on color and design [27]. Another study on language development indicated that two-year-olds used many nouns related to food and drink, and shelter, such as household items and furniture, and showed strong interest in these items [28]. Thus, depictions of food, clothing, and shelter in picture books would be meaningful.

2. Purpose of This Study

There are few quantitative studies on animal depictions in baby picture books. Therefore, this study quantitatively analyzes the depictions of animals in baby picture books, focusing on their food, clothing, and shelter, and examines the authors' images of animals and the images and knowledge that child readers may receive.

3. Methods

The survey was conducted in a city library in Tokyo, Japan, from April 2021 to September 2022. Japanese picture books depicting animals for children aged 0–2 years in the open stacks were selected. Picture books with only the illustrated objects and their name were excluded from the survey. A preliminary survey revealed the difficulty in identifying the individuals and species of non-mammals; therefore, only mammals were included.

Depiction of each animal was recorded based on the elements identified from the pictures and text in the picture books (Table 1). The depiction types of each animal represented three states: *real*, a state in which the animal had a realistic appearance; *humanized*, a state in which the animal had a realistic appearance but spoke or thought like a human; and *anthropomorphic*, a state in which the animal walked on its hind legs, thus clearly differentiating it from a real animal [18, 21]. The clothing of animals was classified into five categories. Upper and lower garments covered both the upper and lower body, such as dresses, overalls, and aprons. Body color denoted the color that occupies the largest area on the animal's body, classified into 11 basic colors that a single word describes a specific color in 98 languages, including

Japanese [29]. Food for animals in the picture books was recorded as realistic, that is, food and drink consumed by animals in the biological world, or unrealistic, that is, food and drink not consumed by animals in the biological world.

Shelter was defined as the animal's home (nest) or a place where the animal is depicted sleeping or eating. When it was difficult to establish the classification, two judges mutually consulted.

Table 1. Elements surveyed and their classifications.

Element	Classification
Species	Specific description
Depiction type	Real/Humanized/Anthropomorphic
Designation	(suffix) San/Chan/Kun/Other (specific description)
Clothing	Upper garment/Lower garment/Upper and lower garments/Accessories/Shoes (specific description)
Body color	White/Black/Red/Yellow/Green/Blue/Brown/Purple/Orange/Pink/Gray
Food	Realistic/Unrealistic (specific description)
Use of tableware	Present (specific description)/Absent
Shelter	Present (specific description)/Absent

4. Results

4.1. Number of Animals

Among the 669 baby picture books with mammals surveyed, the number of appearances of the top 10 mammal species was as follows: 455 rabbits, 438 cats, 379 dogs, 256 bears, 185 pigs, 168 mice, 167 elephants, 132 monkeys, 99 squirrels, and 84 foxes. Owing to the extremely high number of appearances of the top four species, subsequent results focus on rabbits, cats, dogs, bears, and other characteristic animals.

4.2. Designation in Text

Table 2 shows the frequency of description of animal designation in the text other than just the species name. San, chan, and kun are suffixes used after names in Japanese. The most common was “species name + san,” for example, usagi san (rabbit). “Species name + chan” was confirmed more frequently for cats than for the other three species. Several other names were found using baby talk, such as “usako (rabbit)” and “wannko (dog),” and onomatopoeia, such as “nyannyan (cat)” and “wanwan (dog).” Another characteristic designation, “o + species name,” was identified in 9 of the 20

cases for monkeys (osaru).

Table 2. Frequency of species' designation in text.

	Rabbit	Cat	Dog	Bear
San	72	23	16	42
Chan	0	16	4	5
Kun	1	2	3	1
Others	Usako: 1 Pyonpyonusagi: 1	Nyanya: 2 Nyannyan: 1	Wanko: 2 Wanwan: 2	

4.3. Clothing

The results of the clothed animals and their depiction types are shown in Table 3. Rabbits wearing clothes appeared the most often, followed by bears. Rabbits and bears appeared extremely frequently as the anthropomorphic type. Cats appeared most frequently as the anthropomorphic type, but the real type also appeared more frequently than rabbits and bears. Dogs wearing clothes appeared the most often with real forms.

Table 3. Number of clothed animals and their depiction type.

	Rabbit	Cat	Dog	Bear
Real	3	20	75	1
Humanized	0	6	9	1
Anthropomorphic	218	80	21	107

Table 4. Number of animals classified by clothing.

		Rabbit	Cat	Dog	Bear
Classification of clothing	Upper garment only	15	9	4	7
	Lower garment only	4	7	3	13
	Upper and lower garments	179	54	20	78
	Accessories only	23	36	78	11
	Shoes	18	12	4	9
Style of lower garment	Pants	50	30	17	46
	Skirt	133	31	6	45

Table 4 shows the number of animals classified by their clothing. Rabbits, cats, and bears appeared the most frequently wearing upper and lower garments. A limited number of animals appeared wearing shoes, indicating that most animals were barefoot, only wearing clothes. Regarding the style of lower garments, the skirt style was familiar compared to the pants style in rabbits. As many as 69 dogs appeared in real forms with collars; only two cats wore collars in real forms.

4.4. Body Color

Table 5 shows the results of the body color records for the animals. Realistic colors such as white and brown were the most frequently identified. Cats and dogs were painted more frequently in white and brown than in black, among realistic colors. The unrealistic color pink was also identified in many rabbits. Cats had various unrealistic colors, including purple

and pink.

Table 5. Number of animals classified by body color.

Rabbit	Cat	Dog	Bear
White 254	White 136	Brown 174	Brown 161
Brown 108	Brown 90	White 105	White 33
Pink 51	Black 74	Black 38	Gray 24
Gray 14	Yellow 58	Gray 30	Black 23
Blue 11	Gray 46	Yellow 20	Yellow 9
Yellow 8	Orange 17	Blue 4	Blue 4
Orange 3	Blue 7	Orange 4	Purple 2
Green 2	Purple 4	Green 2	
Purple 2	Red 2	Pink 2	
Black 2	Green 2		
	Pink 2		

4.5. Food

The food and drink contents as the animals' meals and use of eating utensils were recorded. Unrealistic food and drink for the animals, such as cake and juice (45 of the 69 food and drink items), were often depicted as being prepared or eaten by anthropomorphic animals using eating utensils (for 38 of the 69 food and drink items). As a characteristic description, an anthropomorphized bear initially sat at a table and attempted to eat and drink using tableware but could not use

cutlery properly. Eventually, the bear climbed the table and ate by grabbing the food by its forelegs. A total of 34 rabbits ate carrots, 20 cats ate fish, 8 dogs ate bones, and 9 bears ate honey. We identified depictions of foods that can cause mild or severe health problems and should be given with caution or not given at all to animals, such as carrots, apples, oranges, strawberries, lettuce, cabbage, peas, and pears for rabbits whose staple diet is grass; sardines, rice, apples, dried bonito flakes, peanuts, lemons, and grapes for cats; and bones, oranges, fish, and peanuts for dogs.

In other characteristic species, a lion ate strawberries, and a tiger ate apples in one picture book. Lions ate meat (chunks or cooked) only in five picture books. In two of these books, the lions said, "Excuse me" while eating meat.

4.6. Shelter

Table 6 shows the number of animals classified by shelter. The most frequent cases depicted animals without shelter, and the backgrounds were simple. Among the depictions of animals with shelter, rabbits and bears most frequently appeared as anthropomorphic with their own houses. Cats and dogs were most often depicted in human homes, with cats mostly depicted indoors and dogs in the garden or in the doghouse in the garden.

Table 6. Number of animals classified by shelter.

Rabbit	Cat	Dog	Bear
House 25	Human's home 54	Human's home 28	House 30
Underground hole 14	House 16	Doghouse 16	Meadow 9
Meadow 11	Meadow 3	Garden 8	Underground hole 7
Forest 9	Garden 2	Pasture 3	Forest 4
Human's home 2	On the tree 1	Park 1	Human's home 1
Hut 1	Park 1	Meadow 1	None 205
Snow field 1	None 361	Road 1	
None 392		Forest 1	
		None 320	

5. Discussion

5.1. Animals in Picture Books

Mammals were common in baby picture books, which is consistent with the study on Dutch story picture books that suggested that authors employ the strategy of including those animals that are generally loved by readers [30]. In this study, four mammal species: rabbits, cats, dogs, and bears, frequently appeared. In the questionnaire survey with elementary school pupils regarding familiar and favorite creatures, dogs and cats were the most frequently denoted, and the top eight favorite animal species were all mammals, including rabbits [31]. It is assumed that authors of baby picture books follow this trend of including mammals that are generally loved by child readers.

5.2. Designation in Text

The common designations for the animals were "species name + san." This is consistent with a study on baby talk about

animals in baby picture books [10]. San is a suffix indicating respect or familiarity [32, 33]. As the text in baby picture books is a significant component of infants' language development [2], expressions might be polite.

Cats were identified more often with "species name + chan" than the other three species. The suffix chan is generally used for young children [34]. Cats maintain baby schema even in adulthood [35], and neoteny may influence human cognition toward cats [36]. Humans perceive cats as young and cute, and they indicate cats with the suffix chan.

The suffix kun and several other names using baby talk and onomatopoeia were also identified in animal designations. Children begin using baby talk from around the age of one [37]. Onomatopoeiae may be the first words spoken by infants [38] and may be effective in promoting early language acquisition and communication in children [39]. The use of baby talk and onomatopoeia would be characteristic of baby picture books.

In other characteristic animals, monkeys were identified as "o + species name." O is a prefix used before the word and belongs to the honorific system in Japanese [40]. In Japan,

monkeys live in the mountains, and humans have distinguished them from other mammals, such as wild boars and deer that live close to human settlements; humans have generally considered monkeys inedible and have maintained distance [41]. Monkeys are considered messengers of gods and are treated with immense care at shrines [42, 43]. Japanese proverbs also express these beliefs, and monkeys are regarded as gods or their messengers of victory and protection against evil, as well as a good luck charm [43-45]. As monkeys are special to the Japanese, the prefix *o* is used in designations with respect in baby picture books.

5.3. Clothing

Rabbits and bears tended to wear clothes in anthropomorphic forms. As human–bear encounters are rare, bears are more likely to appear with unrealistic features in stories. Anthropomorphism allows them to wear clothes rather than being naked. Many animals wore upper and lower garments but no shoes. Anthropomorphic animals are idiosyncratic; they have both human and animal characteristics and have intellectual and psychological distance from readers [46]. The natural characteristics of partially clothed animals are not entirely lost, but the appearance is more relatable for humans [47]. Anthropomorphic animals can change the depiction types to real or humanized in stories [48]. To preserve the characteristics of anthropomorphic animals, it is assumed that animal-like features are left at the feet, which are inconspicuous but are more easily noticed when the conversion of depiction types occurs.

Many rabbits wore skirts rather than pants. University students showed stereotypes about animals and their characteristics; rabbits were associated with feminine conversation styles and cute characters [49]. It is assumed that the cute and feminine image of rabbits reflects in the lower garment style.

Cats appeared with clothing not only anthropomorphically but also with real features. Cats often change the depiction types in picture books [48]. Cats were domesticated 5,000 years ago by the ancient Egyptians to protect crops from rodents [50]. Cats were eventually deified as the goddess Bastet and came to be bred all over the world. In medieval Europe, cats were associated with witches and were persecuted. In Japan, cats have also been revered as grain spirits, while at the same time, they were sometimes regarded as monsters that brought harm to humans. Thus, cats have a mystique that is interpreted as both good and evil [51]. Although cats are companion animals, they have a mystical image. Both realistic depictions, such as wearing only ribbons, and unrealistic depictions, such as wearing upper and lower garments, were identified in cats.

There were many dogs with collars; in contrast, almost all cats appeared without collars. It is consistent with an earlier study on dogs and cats in picture books [18]. As per the guidelines for the proper care of dogs and cats in densely populated residential areas [52], dogs should be kept in good communication by taking walks, whereas there is no mention

of walks for cats. It is assumed that the authors have a strong image of dogs being taken for walks and, therefore, often depict dogs wearing collars.

5.4. Body Color

Realistic colors were predominant for the body colors of the animals. This aligns with infants' preference for objects painted in standard colors [53]. Next in line to the realistic colors of white and brown, the unrealistic color of pink was used for rabbits. Pink is generally associated with cute images [54]. Children often painted rabbits pink compared to other animals [55]. The general image of rabbits as cute might be reflected in their body color in picture books.

In cats and dogs, white and brown were identified more frequently than black among realistic body colors. Many black cats are actually kept at home [56]. It might not necessarily correspond to the actual proportion of body colors of cats and dogs, but the visibility of facial expressions may assume priority in illustrations for picture books. Additionally, various unrealistic colors were used in cats. Owing to the strong mystique of cats [51], unrealistic colors can be chosen.

5.5. Food

Anthropomorphic animals often prepared or consumed unrealistic food and drink using utensils. This becomes possible because anthropomorphic animals can perform complex behaviors such as cooking and eating with manners similar to those of humans. However, an anthropomorphic bear in a picture book could not use cutlery properly, which represents the difference between humans and animals. Similarly, in animal tricks, animals are made to perform like humans; however, sometimes, a bit of ineptitude is introduced in their character to establish differences from humans [57]. Anthropomorphic animals in picture books also perform in ways that distinguish them from humans.

There were links between certain animals and food, for example, rabbits and carrots, cats and fish, dogs and bones, and bears and honey. In the children's book *Winnie the Pooh* by A. A. Milne in 1957, honey is depicted as the favorite food of the stuffed bear named Pooh. Furthermore, in the Walt Disney Company's animated film *Winnie the Pooh*, one character, Rabbit, grows carrots in the garden. A Japanese nursery rhyme reads: "Neko katsubushi yarukara yottoide (Come here, cat, I'll give you dried bonito flakes [lyrics by H. Sakata])." In the nursery rhyme *This Old Man from Mother Goose*, the lyric says, "Give a dog a bone." There are common images of animals' favorite food in the world. The authors also have similar images and reflect them in their works.

A few illustrations of food were identified that can cause mild or severe health problems and, therefore, should be given with caution in terms of quantity and feeding methods or should not be given at all to animals in the biological world [58, 59]. These depictions can mislead children in their biological knowledge about animals [21] and may lead to health problems for animals when children give animals inappropriate foods in inappropriate ways.

In other characteristic animals, lions ate strawberries and tigers ate apples, and lions said, “Excuse me” when eating meat. When Grimm’s fairy tales were published as picture books for children, the elements of cruelty and sadness were often excluded from their contents [60]. Kindergarten teachers considered the story of *The Three Little Pigs* desirable for children with peaceful impressions over realistic impressions [61]. It is possible that depictions of predation are viewed as cruel and not peaceful and should be eliminated from baby picture books. The authors seem to avoid creating negative feelings in their readers by depicting animals in a certain manner, even if the depiction is biologically incorrect.

5.6. Shelter

Most animals were depicted without dwelling places. Infants have limited visual abilities, especially depth perception [62]. Moreover, differentiation of self and others begins at around four months of age, and infants gradually recognize themselves and understand others’ viewpoints and positions [63]. Therefore, simplified backgrounds tended to be chosen in baby picture books.

Rabbits and bears often appeared as anthropomorphic animals with their own houses. Compared to more familiar cats and dogs, humans are less likely to encounter rabbits [64] and bears in reality, which made it easier to depict them unrealistically with houses, in addition to clothes, in stories.

Cats and dogs were often depicted in humans’ homes, indicating that they are associated with the image of companion animals that live with humans. Furthermore, cats were often depicted indoors, and dogs were often depicted in the garden. This may be due to their respective histories of domestication, where cats were expected to serve as indoor rat catchers [50] and dogs as guards or hunting assistants [65]. In the West, many proverbs and folk tales mention dogs remaining outdoors and cats staying indoors [66]. In Japan, the lyrics of a nursery rhyme portray a similar situation: “Inu wa yorokobi niwa kakemawari, neko wa kotatsu de marukunaru (Dogs happily run around the garden, and cats curl up in the kotatsu, heat warmer with quilt [lyrics by S. Mukasa]).” This generalized image of cats and dogs is reflected in picture books [18].

6. Conclusion and Future Prospects

Animals in baby picture books are depicted in accordance with the development and preferences of infant readers. The depicted animals reflected the common images conceived by humans for the species and the history and current states of their relationships with humans. However, a few depictions did not necessarily correspond to the actual ecology of the animals, which could lead to misunderstandings by children and prevent the establishment of positive relationships between humans and animals. Greater attention to animal representations in picture books will improve children’s perception of animals. They will learn about the appropriate ways to interact with animals by reading such picture books, which will lead to better human–animal interactions.

This study focused on four species that more than 200 individuals appeared: rabbits, cats, dogs, and bears. We did not examine species that less than 200 individuals appeared because of the requirements of quantitative analysis. Qualitative analysis could examine these animals in the future.

This study showed the unique descriptions and expressions in baby picture books. To further clarify the characteristics of baby picture books, it is necessary to compare them with other picture books for children aged more than three years. As this is the first study to quantitatively analyze animal depictions in terms of food, clothing, and shelter, analysis of these depictions in other types of picture books will contribute to the development of picture book research.

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