

Generics revisited: Analyzing generalizations in children’s books and caregivers’ speech

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Abstract

Generics, general statements about categories, are believed to transmit essentialist beliefs—the idea that things have a hidden true nature. Research suggests that people essentialize natural (biological and non-living) and social kinds, but not artifacts. Previous studies using small datasets found that generics are often used to describe animate beings in speech to children. Using a larger corpus of children’s books and parent speech, we examined a wider range of kinds and generalizing statements (including habituals and universals). Our results show that generics are more likely used for biological kinds than artifacts and that their use increases in parent speech as children age. However, generics weren’t more likely used for non-living or social kinds than artifacts. Habituals, at least in speech, were more likely used for social kinds than artifacts. Generalizing statements were more likely used for about non-living natural kinds than artifacts. These findings inform the debate over whether generics transmit essentialist beliefs.

Keywords: generics; psychological essentialism; conceptual development; corpus analysis

Introduction

Generalizations are a common class of propositions through which we can learn about properties of the world that hold beyond a particular object or instance. They can be communicated via generic statements (e.g., “Cats have tails”), habitual statements (e.g., “Kitty is a tail wagger”), and universally quantified statements (e.g., “All cats have tails”). Generics and universally quantified statements are both generalizing statements about kinds (Lazaridou-Chatzigoga, Stockall, & Katsos, 2017), but universally quantified statements promote generalization more explicitly and do not allow for exceptions (Gelman, Leslie, Was, & Koch, 2015). In contrast, habitual statements are generalizing statements about specific subjects (Govindarajan, Durme, & White, 2019). For example, when someone says “Kitty is a tail-wagger”, one makes a generalization about an individual instead of a group, where the generalization concerns a pattern of behavior over time (Tessler & Goodman, 2019).

Generics are of particular interest since they are thought to express cognitively fundamental default generalizations (Leslie, 2008), and are assumed to serve as important vehicles for essentialist beliefs: beliefs that things have an unobservable true nature that determines their identity. (Mehrotra, 2018; Moty & Rhodes, 2021; Rhodes, Gelman, & Leslie, 2024; Rhodes, Leslie, & Tworek, 2012; Rosenthal, 1973). Generic statements are hypothesized to promote essentialist beliefs by establishing strong links between categories

and properties and by suggesting that properties are causally central to categories (Cimpian & Markman, 2009; Foster-Hanson, Leslie, & Rhodes, 2022; Gelman, 2004b; Ran, Kirby, Naigles, & Rowe, 2023). Children may make use of such statements to learn the causal structure of the world; in fact, children hear generic statements from their caregivers (Gelman, 2009), make generalizations after being exposed to them (Gelman, Ware, & Kleinberg, 2010) and often recall quantified statements as generics (Hollander, Gelman, & Star, 2002; Leslie & Gelman, 2012; Leslie, Khemlani, & Glucksberg, 2011). Additionally, children endorse more intrinsic explanations of properties after hearing them predicated in generic statements (Cimpian & Markman, 2005; Foster-Hanson et al., 2022; Gelman & Raman, 2003; Gelman, Star, & Flukes, 2002; Gelman et al., 2010; Hollander et al., 2002; Leshin, Leslie, & Rhodes, 2021; Moty & Rhodes, 2021).

Generics, essentialism, and corpus studies

An important source of evidence concerning the role of generics in promoting essentialist thinking comes from corpus studies. Gelman, Coley, Rosengren, Hartman, and Pappas (1998) collected book reading data using four picture vocabulary books containing scenes with labeled images (e.g., an image of a horse with the word “horse”). Analyses of transcripts of parents’ improvisatory reading of these books showed that parents were more likely to use generics to talk about animates (which included biological kinds, e.g., bees, and social kinds, e.g., doctors) than non-animates. This aligns with other empirical findings on essentialism and suggests that biological and social kinds, but not artifacts (e.g., clocks), are essentialized (Gelman & Hirschfeld, 1999; see also Labotka, Gelman, & Jipson, 2021; Lugay, 2020; Seoung, 2021). Universal quantifiers were not used by mothers in the corpus. Instead of using explicit forms of generalization, parents preferred to use implicit ones. In a follow-up study, Gelman, Goetz, Sarnecka, and Flukes (2008) analyzed generalizations in parent-child conversations using eight transcripts from CHILDES (MacWhinney, 2000), finding that while even young children produced generics in all content categories (animate, artifact, food, other), they consistently produced more generics for animates. The study also found that both parents’ and children’s use of generics increased with children’s age. However, these studies were based on

very small corpora. As such, it is unclear if these results are robust and generalize to other language input that children receive.

Work by [Mehrotra and Perfors \(2019\)](#) aimed to extend analyses on generics to a larger sample of parent-child conversations by using a deep neural network classifier to automatically identify generic statements. Analysis of developmental trends in the study found an increase in children's use of generics over age and a decrease in adults' speech. Interestingly, they found no consistent preference for generic usage when talking about animates versus artifacts, contradicting earlier findings from [Gelman et al. \(1998\)](#) and [Gelman et al. \(2008\)](#). They attributed the conflicting findings to methodological differences in annotation: [Mehrotra and Perfors \(2019\)](#) included pronouns while [Gelman et al. \(2008\)](#) did not (for example, the sentence "They have tails" would be excluded in [Gelman et al. \(2008\)](#)); and [Gelman et al. \(1998\)](#) hand-annotated kinds at the sentence level while [Mehrotra and Perfors \(2019\)](#) used [WordNet](#) string matching to identify kinds at the token level, which may not have captured the actual subject of the generic statement. In particular, [Mehrotra and Perfors \(2019\)](#) coded an utterance as generic as long as any noun was classified as generic, which may have inflated the number of generic statements—in their study, 10% of utterances were coded as generic, as compared to 0–3% in previous studies ([Gelman, 2004a](#); [Gelman et al., 1998](#)). The extent to which these annotation choices affected the observed results remains unclear.

Our approach

We sought to better understand the distribution of generic statements by collecting a larger corpus of both children's books and naturalistic conversations, enabled by methodological advancements in natural language processing. In doing so, we focused on input to children that comes from books and parents' speech, given that language input—particularly, from book reading ([Montag, Jones, & Smith, 2015](#)) and caregiver speech ([Huttenlocher, 1998](#))—plays a powerful role in word learning and category formation. We built a corpus of 694 children's books targeted at children from 0 to 12, and a corpus of parents' speech to children that included transcripts from 1140 different caregivers of children who are between the ages of 0 to 12. We also used more robust, context-sensitive neural classifiers for annotation that were trained on a large set of human-annotated data. This approach allowed us to revisit questions in prior corpus-based studies on generics using a much larger corpus with better age coverage and annotation reliability.

Furthermore, we extended the prior analyses in two ways. First, we included not only generic statements but also habitual statements and universally quantified statements. Second, we used a finer-grained classification of kinds into artifacts (e.g., clocks), non-living natural kinds (e.g., water), biological kinds (e.g., bees), and social kinds (e.g. doctors). This classification allowed us to more precisely examine how the

use of generics relates to the dominant view of essentialism in the literature: natural/social kind essentialism. This view maintains that natural kinds, such as biological, non-living, and social kinds, are essentialized, but artifacts are not (e.g., [Gelman, 2003, 2013](#); [Keil, 1989](#); [Rhodes et al., 2024, 2012](#); [Sloman & Malt, 2003](#); though see [Rose & Nichols, 2020](#)). Some might maintain instead that artifacts are less essentialized (see e.g., [Neufeld, 2022](#)). This doesn't affect our approach. In addition to distinguishing biological from social kinds—instead of grouping them together under "animates" as previous work has done—we compare whether those kinds that are thought to be essentialized are more likely to appear in generic statements than artifacts, which aren't thought to be essentialized. Moreover, our classification allowed us to explore whether some of these kinds might be more common in other forms of generalizing statements.

Main research questions

Based on the prior literature ([Gelman et al., 1998, 2008](#); [Mehrotra & Perfors, 2019](#)) we ask the following questions about our corpus:

1. Are generics more likely to be about biological kinds than artifacts?
2. Are generics more likely to be about non-living natural kinds and social kinds than artifacts?
3. What kinds are most likely to occur in habitual and universally quantified statements?
4. How does the likelihood of generics, habituals, and universally quantified statements as input change with children's age?

Methods

All code for the project is available here: https://github.com/sunnyych/Children_Speech_Books.

Data is available upon request. Below we describe our corpora and our classification approach.

Corpus

We investigate input to children by focusing on two sources: children's books and caregivers' speech. These allow us to compare patterns across two mediums of communication that may have different goals in conveying information to children. We thus built a corpus from 447 publicly available children's books on popular online children's story sites such as [Epic! \(2025\)](#), [Owl \(2025\)](#), [Storyberries \(2025\)](#) and included 247 books from the Wisconsin Children's Book Corpus ([WCBC, Lewis, Cooper Borkenhagen, Converse, Lupyan, & Seidenberg, 2022](#)), resulting in a final corpus of 694 books (809,003 words). The caregiver speech was retrieved from the [CHILDES](#) database and included all English transcripts for children aged 0 to 12. Together, the speech contains utterances from 1140 different caregivers (6,696,453 words).

Identifying generalization types

Automatically identifying generics in text has long been a challenge given the context-dependent nature of generics. Earlier work on identifying generic noun phrases relied on statistical learning techniques (Reiter & Frank, 2010) and context-aware, discourse-sensitive approaches (Friedrich, Palmer, Sørensen, & Pinkal, 2015; Friedrich & Pinkal, 2015), while more recent work has used neural network models (De Guzman, 2017; Rezaee, Darvish, Kebe, & Ferraro, 2021). Existing work has also included generics as part of the broader problem of categorizing situation entity types (e.g., states, generics, questions, etc.; Friedrich, Palmer, & Pinkal, 2016).

Our approach was to identify generic and habitual statements by fine-tuning BERT using the human-annotated Wikipedia data from Friedrich et al. (2016), which contains human labels for the situation entity type classification task. The final fine-tuned model had an F1 score of 81.7%, which is on par with state-of-the-art models on the same task. The fine-tuned BERT identified 1923 generic sentences and 1807 habituais in the book corpus, and 17,324 generic sentences and 9864 habituais in CHILDES. The situation-entity type classification happens at a sentence level, which relies on grammatical and syntactic cues without access to the rest of the corpus where the sentence takes place. The limitation in the classifier could result in false positives like “who sleeps in your bed with you” and “you want a bird”. To minimize false positives, we filtered for generics and habituais using GPT-4o, by having the model perform binary classification on each sentence, resulting in 750 generics and 820 habituais in the book corpus, and 6329 generics and 5547 habituais in CHILDES. We performed human annotations on the classifications and reached above 70% accuracy.

We used rule-based regular expressions to extract universally quantified statements given that they are more structured in form and less context-dependent than generics, including sentences whose subjects are modified using key words like “all”, “entire”, and “whole” (a total of 22 modifiers were included), resulting in 516 universally quantified statements in the books corpus, and 1103 universally quantified statements in caregivers’ speech.

Object kind detection with named entity recognition

We focus on four different kinds: artifacts, social kinds, biological and non-living natural kinds. We distinguish between biological kinds and social kinds, which were both categorized under “animates” in previous studies (Gelman et al., 1998).

We categorized as *artifacts* things that are physical objects manufactured by humans such as chairs and cars (Noyes, Dunham, & Keil, 2023; Noyes, Keil, & Dunham, 2018), including human-made food items such as cookies and pizza. *Social kinds* were categorized as things that depend on social practices or social structures as well as positions within those structures, such as taxi drivers and hospitals (Noyes et

Table 1: Examples of subject kinds.

Category	Examples
Biological kind	cat, dog, sheep, tree, hand
Social kind/role	dad, girl, police, doctor, lawyer
Artifacts	ball, pen, chair, table, shirt
Non-living kind	water, sun, river, wave, cloud

al., 2023, 2018). We treat social kinds broadly, and include institutions such as “hospitals”. We also included familial roles (e.g., cousins), as well as gender and racial categories. We categorized as *biological kinds* things that are not human-made and also made of cells such as animals and plants. Human names and pronouns were also categorized as referring to biological kinds. Previous studies have found that the decision to include pronouns can greatly affect the proportion of generics about biological kinds in the corpus. When we exclude pronouns, it means that we do not include the sentences whose subjects are pronouns. Lastly, *non-living natural kinds* were categorized as things that are not human-made and not made of cells, such as rocks and clouds. Some examples are provided in Table 1.

Two annotators used *LightTag* to label 600 randomly selected sentences from the two corpora, with a third annotator settling conflicts. The inter-annotator agreement F1 score was 82.6%. We used the conflict-resolved annotated data to construct a 4:1 train-validation split. We fine-tuned the distilled version of the BERT base model on the training dataset for token classification using Beginning-Outside-End (BOE) tagging. We reached a training F1 score of 93.6% and validation F1 score of 81.8%, which is close to the human inter-annotator agreement score, meaning that we can automatically annotate the corpora at a level of accuracy similar to human annotations.

Unifying sentence annotations

To link the object kinds with sentence types, we used a universal dependency parser (De Marneffe, Manning, Nivre, & Zeman, 2021) to identify the subjects of each sentence. We then mapped the subject identification with the BOE taggings from the earlier step. In our analysis we focused on sentences whose subjects are tagged as biological kind, artifacts, non-living kinds, and social kinds, which is a different approach from Mehrotra and Perfors (2019). Example sentences for each kind with different subject types are shown in Table 2.

Age

The age range for both the children’s book corpus and CHILDES was 0 to 12 years. To examine change over time, for each book, we took the mean of the recommended age group. For example, the story *The Tooth Mouse* is targeted to children aged 3 to 7 and so age is recorded as 5. In the CHILDES dataset, age was recorded based on the actual age information of the children present in the conversation. Note that unlike previous studies that focused only on 2-to-4-year-old-children, we expanded the age range. This wider age

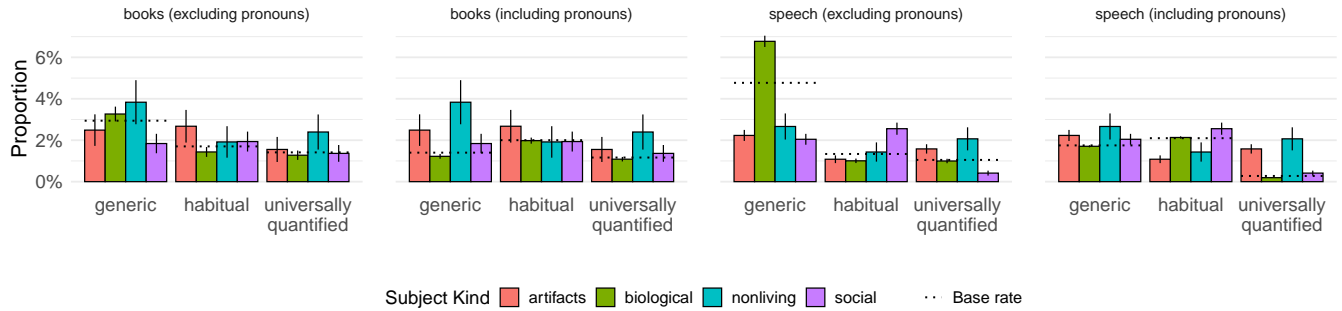


Figure 1: Proportion of subject kinds (biological, social, non-living and artifacts) classified as generic, habitual, and universally quantified out of all statement types (including “other” which is not shown here), compared to the base rate (shown by the dotted line for each statement type) for (a) children’s books, excluding pronouns, (b) children’s books including pronouns, (c) CHILDES speech, excluding pronouns, and (d) CHILDES speech including pronouns. The base rate is calculated as the proportion of the generalizing type (e.g. generics) in the given corpus.

range thus includes children who are learning generics and those who are already familiar with them.

N-gram viewers

We created an n-gram viewer for our book corpus (see [here](#)). N-grams for caregiver and children’s speech can be viewed [here](#) (Sanchez et al., 2019).

Results

Since the central focus of corpus studies on generics and essentialism has been on whether biological kinds, which are supposed to be essentialized, are more likely than artifacts, which aren’t supposed to be essentialized we begin by focusing on this. But since on the dominant view of essentialism, non-living natural kinds and social kinds are also supposed to be essentialized, we ask whether they might be more likely to appear than artifacts in generic statements. We then turn

Table 2: Examples of sentence type and subject kind annotations for children’s books and parents’ speech.

Source	Sentence	Sentence type	Subject kind
Books	Ferrets are happy, active pets who need lots of attention.	Generics	Biological kind
Books	Each day, the sun and moon stayed hidden.	Habitual	Non-living natural kind
Books	All girls who like to brush and comb should have a pet like this at home.	Universally Quantified	Social kind/role
Speech	Cars go fast.	Generics	Artifact
Speech	Mommy makes my breakfast.	Habitual	Social kind/role
Speech	All hamsters have spinning wheels.	Universally Quantified	Biological kind

to habituais and universally quantified statements. Lastly, we ask whether the likelihood of generic statements, habituais and universally quantified statements as input to children increases with their age (see e.g., Gelman et al., 1998, 2008).

Are generics more likely to be about biological kinds than artifacts?

We first aimed to replicate the results in Gelman et al. (1998) and Gelman et al. (2008) to determine whether biological kinds are more likely than artifacts in generics statements.

To examine whether biological kinds were more likely than artifacts for a given statement type, we calculated the proportion of each subject kind (biological kind, social kind, artifact, and non-living kind) in the form of that statement type (generic, habitual, universally quantified) over the occurrence of all statement types with that subject kind. For example, in Figure 1 the green bar above “generic” represents the number of generic sentences about biological kinds divided by the total number of sentences about biological kinds. This approach allows us to see in each corpus which subject kinds are more common for each type of generalizing statements while controlling for the base rate of the relevant subject kind. We found that in books, 83% of the subjects were biological kinds, and in speech, 89% of all subjects were biological kinds. Within generics in books, 62% were biological kinds, and 78% were biological kinds in speech. In addition, we calculated the base rate of occurrence for each generalization type (i.e., the proportion of all subject-containing sentences that were classified as generics, habituais, or universally quantified respectively), which are shown by the dotted lines in Figure 1 for each statement kind in each corpus. We conducted our analyses both with (Mehrotra & Perfors, 2019) and without pronouns (Gelman et al., 2008) to see whether this could account for the different results that prior research obtained.

To determine whether the rates of occurrence for different object kinds differed, we conducted a chi-squared test comparing whether the proportion of biological kinds differed

from artifacts for generics compared to non-generics. We found that when pronouns were excluded, there was no significant difference between the proportion of generics about biological kinds (3.3%) and artifacts (2.5%) in the books corpus ($\chi^2 = 2.47, p = .116$); however, the proportion is significantly higher for biological kinds (6.8%) than artifacts (2.2%) in the speech corpus ($\chi^2 = 340.06, p < .001$). If pronouns are included, the proportion of generics about artifacts is significantly higher than that of biological kinds in the book ($\chi^2 = 18.52, p < .001$) and speech corpus ($\chi^2 = 18.05, p < .001$).

Using a much larger corpus and a more robust, context-sensitive neural classifier, we find that if we exclude pronouns as potential subjects for generics statements, we replicate Gelman’s (1998; 2008) finding that in parent’s speech to children, generics are more likely to be about biological kinds than artifacts; if pronouns are included, we replicate Mehrotra and Perfors’s (2019) finding that for generics, biological kinds are not more common than artifacts. The inclusion of pronouns clearly makes a difference to whether biological kinds are more likely than artifacts in generic statements. However, because statements with singular pronouns as subjects—e.g., “It has wings”—aren’t generic statements and moreover, since it is arguably the case that even those with plural pronouns aren’t generic—because they aren’t kind-referring—we think it is reasonable to follow Gelman et al. (1998) and only focus on treating generic statements as those which exclude pronouns as subjects. Thus, for the remainder of our analyses, we exclude pronouns.

Are generics more likely to be about non-living natural kinds and social kinds than artifacts?

Since non-living natural kinds and social kinds are also supposed to be essentialized, here we ask whether they are more likely than artifacts in generic statements. We found that non-living natural kinds were not more likely than artifacts ($\chi^2 = 1.45, p = .229$ for books, and $\chi^2 = 1.94, p = .164$ for speech) and that social kinds didn’t differ from artifacts ($\chi^2 = 2.05, p = .153$, for books, and $\chi^2 = .802, p = .370$, for speech).

What kinds are most likely to occur in habitual and universally quantified statements?

Having examined generics, we now turn to two other kinds of generalizing statements: habituals and universally quantified statements, asking whether kinds that are supposed to be essentialized (i.e., natural/social kinds) are more common than those aren’t (i.e., artifacts).

In the book corpus, there are more habituals about artifacts (2.67%) than biological kinds (1.43%) ($\chi^2 = 12.59, p < .001$). No difference was found between the two kinds in the speech corpus ($\chi^2 = 0.42, p = .517$). For universally quantified statements, the proportion of artifacts is higher than that of biological kinds for books ($\chi^2 = 12.59, p < .001$), and in speech there are also more quantifiers about artifacts than biological kinds ($\chi^2 = 25.49, p < .001$).

When comparing non-living natural kinds to artifacts, we

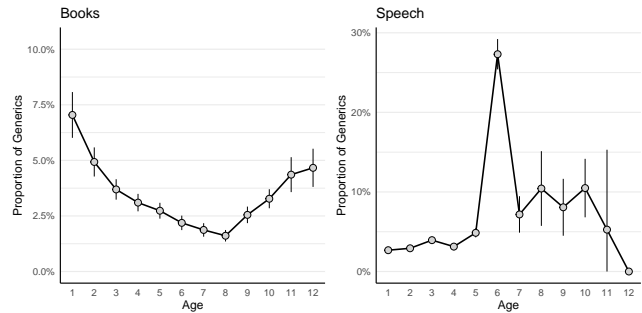


Figure 2: Change across age for the proportion of generics in books (left) and speech (right) with errors bars reflecting 95% confidence interval. Note that the range of the y-axes differ between the book and speech corpora.

found that they didn’t differ for habitual statements in either the book ($\chi^2 = 1.45, p = .229$) or speech corpus ($\chi^2 = 1.94, p = .164$). For universally quantified statements, non-living natural kinds did not differ from artifacts for books ($\chi^2 = 2.21, p = .136$) or speech ($\chi^2 = 2.70, p = .100$).

The proportion of habituals about social kinds didn’t differ from artifacts in the book corpus ($\chi^2 = 2.39, p = .122$) but were significantly higher than artifacts in the speech corpus ($\chi^2 = 69.85, p < .001$). For universally quantified statements, there was no difference between social kinds and artifacts in the book corpus ($\chi^2 = 0.16, p = .693$) but artifacts were more frequent than social kinds in the speech corpus ($\chi^2 = 76.87, p < .001$).

How does the likelihood of generics, habituals, and universally quantified statements as input change with children’s age?

Gelman et al. (1998, 2008) finds that generics increase in parents’ speech as children age but Mehrotra and Perfors (2019) didn’t find an increase. Here, we first ask whether generics increase as input to children in both books and parent speech as children age before turning to habituals and universally quantified statements.

Figure 2 shows the change across age in the proportion of generics for books and speech. For each corpus, we fit a logistic regression using age to predict the occurrence of generic statements (1 for generic, 0 for non-generic) and found that generics decreased with age for books ($\beta = -0.10, p < .001$) but increased with age for speech ($\beta = 0.27, p < .001$).

We next analyze the developmental trends of habituals and universal quantifiers. We find that habituals decrease over age for books ($\beta = -0.054, p < .001$), while universally quantified statements increase with age for both books ($\beta = 0.063, p < .001$) and speech ($\beta = 0.130, p < .001$). There was no significant effect of age for habituals in speech ($\beta = 0.037, p = .088$).

General discussion

Using a corpus of 694 children’s books and a corpus of care-

giver speech to children that included transcripts from 1140 different caregivers, we sought to better understand whether generics might transmit essentialist beliefs. In addition, we extended the scope of previous corpus analyses to include non-living natural kinds and social kinds and two other forms of linguistic generalization: habituals and universally quantified statements.

We found that biological kinds are indeed more likely than artifacts in parent's use of generic statements when talking to children. But we found that whether they are more likely depends on whether pronouns are treated as subjects in generics statements. Thus, our findings align with both Gelman et al. (1998, 2008) and Mehrotra and Perfors (2019): if pronouns are excluded, biological kinds are more likely than artifacts; if they are included, they are not. We suggested, however, following Gelman et al. (1998, 2008), that it is better to exclude pronouns as subjects when determining whether a statement is generic.

Generics and essentialism: some complications

Whereas previous work lumped biological kinds and social kinds under the heading of “animates”, we treated them separately. In doing so, we found that social kinds were not more likely than artifacts in generic statements. Moreover, we also found that non-living natural kinds were not more likely than artifacts in generic statements. Though the dominant view of essentialism is natural/social kind essentialism, it is surprising that if generics are supposed to transmit essentialist beliefs, they only do so for biological kinds. That is, if being more frequent than artifacts—which are widely agreed to not be essentialized—in generic statements suggests that generics promote essentialist beliefs, it isn't clear why non-living natural kinds and social kinds aren't more likely than artifacts, especially since these kinds, like biological kinds, are also supposed to be essentialized.

Of course, the fact that social kinds and non-living natural kinds are not more likely than artifacts in generic statements doesn't suggest that generics don't sometimes promote essentialism. A wide range of work shows that exposing children to generics in experimental contexts leads them to form more essentialist beliefs about the kind (e.g., Gelman et al., 2010; Rhodes et al., 2012). At the same time, a recent wave of research has challenged the idea that generics promote essentialism (e.g., Hoicka, Saul, Prouten, Whitehead, & Sterken, 2021; Noyes & Keil, 2019, 2020; Rose, Zhang, Han, & Gerstenberg, 2023; Tessler & Goodman, 2019).

Adding to the emerging research that complicates the connection between generics and essentialism we add the following: neither non-living natural kinds nor social kinds were more likely than artifacts in generics. But social kinds were more likely than artifacts for habitual statements. Should we conclude that generics promote essentialism for biological kinds, and that habituals promote it for social kinds? And why are non-living natural kinds not more frequent than artifacts for any of these types of generalizing statements if they too are supposed to be essentialized? It is hard to make sense

of this pattern if generics promote essentialism and the kinds that are supposed to be essentialized are natural and social kinds. Note that even if one maintains that natural and social kinds are more essentialized than artifacts (see e.g., Gelman, 2013), the problem still remains. Indeed our pattern of results raises the following possibility about the increased frequency of biological kinds in generic statements: Might the fact that generics are more frequent for biological kinds arise, not because of anything about essentialism, but because animals are particularly interesting to children (e.g., LoBue, Bloom Pickard, Sherman, Axford, & DeLoache, 2013) and generics merely provide a simple form of language to talk about them? Cross cultural differences in essentialism (e.g., Xu, Wang, Moty, & Rhodes, 2025) may further complicate the connection between generics and essentialism.

One reason to think that generics provide a simple form of input for which to communicate with children about categories comes from our finding that in books, generics are more common early on, and decrease with age. Book reading provides a rich pedagogical context that promotes learning about categories (Montag et al., 2015). And generics provide a simple and accessible way to communicate with children about categories and may promote early formation of abstract category representations (e.g., Cimpian & Erickson, 2012; Gelman & Raman, 2003; Gelman et al., 2010; Leslie, 2007, 2008, 2012). The increased frequency of generics early on in books attests to this. Indeed, they may decrease over age because children can understand more complex forms of generalization involving different quantifier terms (e.g., “many”, “most”, “all”; see Hollander et al., 2002).

Though aligning with Gelman's (1998; 2008) findings, it's unclear why the use of generics in parent's speech to children increases as children age. If generics provide an earlier emerging, accessible way for children to learn about categories, why do they increase in parents speech to children over age, but decrease in children's books? This, we think, only adds to the complicated connection between generics and whether they promote essentialism.

Conclusion

Generics are supposed to be a central vehicle by which essentialist beliefs are transmitted. Corpus studies provide an important source of evidence for the link between generics and essentialism. Prior small-scale corpus studies suggested that essentialized kinds—natural and social kinds—are more likely to feature in generic statements than non-essentialized ones, like artifacts. We revisited this claim and found that while biological kinds do appear more than artifacts in generic language when parent's speak to children, non-living natural kinds and social kinds are not more likely than artifacts. This, we argued, challenges the connection between generics and essentialism. Future work can test the role of essentialism for non-living kinds and social kinds in an experimental setting to see if children learn to generalize based on generic statements about these two kinds.

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