

**Nonhuman animals and the relative pronoun ‘who’ in English learner’s dictionaries  
and graded readers**

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Abstract

This paper reports on a corpus-based study that investigated how monolingual English learner’s dictionaries judge the use of the relative pronoun *who* with nonhuman animal antecedents, whether the use of the relative pronoun *who* with nonhuman animal antecedents is found in English graded readers, and what factors influencing the choice to use the relative pronoun *who* with nonhuman animal antecedents might be present in the graded readers. The study found that the learner’s dictionaries did not allow for the target construction, the target construction was attested in the graded readers, and several potentially influencing factors were present. This paper also discusses implications for ecologically-aware English as an Additional Language materials and pedagogy based on the study’s findings.

Keywords: animals, corpus linguistics, learner’s dictionaries, graded readers, EAL

## Introduction

In the context of teaching and learning English as an Additional Language (EAL), many coursebooks and other materials now contain content or themes that are explicitly focused on ecological issues. However, there has been a lack of attention paid to the way seemingly mundane EAL topics affect, and are affected, by ecology. For example, the study described in this paper focused on functional lexicogrammar choices which shape, or construe, the representation of nonhuman animals in EAL materials regardless of a text's theme or content. Specifically, this study looked at whether EAL reference materials treat the use of the relative pronoun *who* with animal antecedents as acceptable, whether such a construction appears in EAL reading materials, and what implications the findings may have for EAL pedagogy and ecolinguistic awareness in EAL contexts.

Although the target construction investigated in this study may ultimately be a small part of how animals are represented in EAL materials, I hope that it can be part of a larger drive to expand our understanding of how ecological issues are entwined with linguistic ones, and how those issues are presented and conceived of in EAL contexts and society in general. In addition, it is hoped that this study can inform future EAL materials development and ecolinguistically-aware approaches to teaching and learning in EAL contexts.

## Background

The purpose of investigating the target construction, the use of the relative pronoun *who* with nonhuman animal antecedents, has both broad and narrow aspects. The broad aspect is that our lexicogrammar choices shape the world, including the ecological reality, in which we live; or as Halliday (2001, p. 185) claims, “language does not correspond; it construes”. There are many ways by which humans construe nonhuman animals which distances humans from them, such as by semantically excluding humans from the condition of being animals (Shapiro, 1995). Another way humans distance themselves from nonhuman animals is through lexical distinctions that treat humans and nonhuman animals as different kinds of entities even though the underlying reality is the same, such as by referring to dead human bodies as corpses and dead nonhuman bodies as carcasses (Stibbe, 2001).

Yet another way that humans distance themselves from nonhuman animals is through erasure. Erasure indicates that “something important, something that we should be giving attention to, has been ignored, sidelined or overlooked within a text or discourse” (Stibbe, 2015, p. 146). It is a “form of exclusion or marginalization, particularly in relation to identity categories” (Baker & Ellece, 2011, p. 40). The conventional use of, for example, *which* rather than *who* with nonhuman animal antecedents identifies nonhuman animals as belonging to a class of ‘things’ that lack sentience, and excludes them from being identified as belonging to a category of beings with sentience, feelings, or personalities. The use, or lack thereof, of certain pronouns has the ability to erase “the unique nature and complexity of the beings being represented (Stibbe, 2012b, p. 49).

Pennycook (1994, p. 175) points out that pronouns “always imply relations of power” and enforce an implicit or “covert assumption about shared communality” (p. 176). In the

case of the relative pronoun *who*, restricting the pronoun to humans is a mechanism within a systemic constellation of linguistic mechanisms that seems to set up an ‘us’ (humans) versus ‘them’ (nonhuman animals) (Stibbe, 2012a); in other words, an implied dichotomy of “conscious versus non-conscious — those entities that are treated as endowed with consciousness and those which are not” (Halliday, 2001, p. 195). The relative pronoun *who* is said to impart an “implication of personality” (Oxford, 1989, p. 290), but this may as well be an implication of consciousness. Ascribing consciousness or personality to others, whether human or nonhuman, through lexicogrammar choices does not guarantee fair or just treatment, as the persistence of sexist and racist language directed by humans toward other humans demonstrates. Nor does using pronouns such as *who* with nonhuman animals directly demonstrate that the speaker or writer intends to adopt a positive stance toward them (Gilquin & Jacobs, 2006; Gupta, 2006; Cook, 2015), but it is arguably a prerequisite to the possibility of adopting a better stance because, as Stibbe (2014, p. 149) notes, “it is hard to expect people to consider and care about things that are systematically erased”. Thus, ecologically-aware applied linguistics and EAL education should take an interest in exploring constructions such as the use of *who* with non-human animal antecedents.

The narrow aspect is related more directly to the study’s EAL context. Specifically, the narrow aspect is that this study is investigating the construction in question in a restricted scope and setting: the educational and pedagogical context of EAL. As Jacobs (2004) and Gilquin and Jacobs (2006) have found, using *who* with nonhuman animals is a contested construction in mainstream English reference works; rejected by some and accepted by others. Educators in EAL contexts face a constant need to balance prescription with description; to help learners acquire fixed patterns and understand rules and conventions, but also to develop an understanding that actual language use is contingent. EAL practitioners must work through serious pedagogic concerns when constructions that are contested or variable in mainstream discourse are presented as ‘rules’ in EAL materials. A lack of clarity about the variability of constructions may leave learners confused; on the other hand, a focus on firm ‘rules’ over evidence of usage may also be detrimental to learners because the ‘rules’ may actually contradict the facts of language use (Celce-Murcia, 1999).

Matters are further complicated when EAL practitioners realize that descriptive approaches are not necessarily neutral descriptions of linguistic systems. Pennycook (1994, p. 174) describes applied linguistics and EAL practitioners as frequently operating with an “unproblematic descriptivism” defined by its opposition to prescriptivism; regarding pronouns, the implication is that that EAL practitioners might see pronouns as merely replacing nouns, but not as language choices that categorize selves and others. As such, investigating the target construction in EAL contexts might reveal tensions between prescriptive (‘rules’) and descriptive (usage) approaches, but also tensions and hidden assumptions within pronoun choice and usage, with implications for ecologically-aware pedagogy and materials development.

Most ecolinguistic-oriented studies of EAL materials have focused on the ways in which explicitly ecological and environmental issues have been presented in EAL texts. For example, Jacobs and Goatly (2000) have cataloged the proportion and type of ecological issues and associated activities in 17 EAL coursebooks. Haig (2003) describes a novel

pedagogical approach, described as Ecological Critical Language Awareness pedagogy, where learners of English themselves analyzed the ecological themes and content of class texts. Other research (Al-Jamal & Al-Omari, 2014) has analyzed EAL textbooks based on the ecological sensitivity of themes found in the textbooks. On the other hand, Stibbe (2004, p. 243) criticizes EAL textbooks for reinforcing shallow environmentalism that “reacts to ecological destruction by addressing immediate physical symptoms (such as acid rain or depletion of the ozone layer), but refuses to address the underlying cultural, political and psychological causes”, and that shallow environmentalism “suggests that there is no problem in the ideological values being propagated in English education materials, so long as the ecological destruction they are associated with is ameliorated” (p. 243). Similarly, EAL textbooks in China have been criticized for presenting environmental issues from a shallow perspective and that “shallow environmentalism is best seen as a hegemonic discourse in constant struggle with alternative discourses and perspectives” (Xiong, 2014, p. 240).

There has been some research that investigated the ecological implications of how nonhuman animals are presented in EAL textbooks, independent of themes or whether the texts were eco-oriented. For example, Jacobs et al. (2016) analyzed 22 EAL coursebooks to determine how many of the books’ activities contained animals, what kind of animals appeared, and how the animals figured in the activities (i.e. were they the focus of an activity?). Other research involving the presentation of nonhuman animals in EAL texts has been produced through interdisciplinary approaches incorporating fields such as gender studies (e.g. Bahman & Rahimi, 2010). Nevertheless, the kind of specific investigation of the ecological implications of functional lexicogrammar that this study undertook has generally been overlooked in other ecology and environmental-oriented research in EAL contexts. As Schleppegrell (1997, p. 49) notes regarding environmental education in general, “language patterns themselves are rarely the focus of attention”; somewhat ironically, this appears to be common in EAL contexts as well. This study’s theoretical framework, however, is more reminiscent of arguments claiming that certain linguistic mechanisms or constructions, such as grammatical metaphor (Halliday & Martin, 1993) or transitive clauses (Goatly, 2001), may be implicated in socially or ecologically unsound discourses, albeit in a much more limited context and with greatly reduced scope. In other words, this study did not investigate the presentation of explicit ecological content or themes, but rather one English lexicogrammar construction that may have ecological implications, as it appears in EAL materials.

The case of using the relative pronoun *who* with nonhuman animal antecedents has, however, been researched outside of EAL contexts. This study takes a number of cues from work by Gilquin and Jacobs (2006), who analyzed reference works, such as style guides and dictionaries, and concordances from the British National Corpus (BNC) in order to investigate the ways in which *who* is used in reference to nonhuman animals, and found that although usage of the target construction was ignored or rejected by several reference works, it was acceptable to some and it did occur with regularity in the corpus, and that this usage “usually can be explained by such factors as closeness with the nonhuman animal and/or features shared with humans” (p. 99) and that it “may give the impression of nonhuman animals being put on a more equal footing with humans” (p. 99). That work built upon Jacobs (2004), who analyzed reference works’ treatment of the target construction and put forth

several options for future research into how *who* is used with nonhuman animals. Gupta (2006) investigated how *who* is used with nonhuman animals within the discourse of fox hunting, finding that a complex web of factors including tradition, emotional closeness, and intention to attribute sentience may trigger the use of the target construction. The use of *who* with nonhuman animals was also discussed by Cook (2015) in a study of the ways proponents of human-exceptionalism and proponents of animal-rights use innovative lexical discourse strategies that are at odds with mainstream discourses. Additionally, Sealey and Oakley (2013) addressed *who* being used in reference to animals that were also given gendered pronouns. Even ‘animal industry’-linked publications have considered questions about pronoun use (e.g. Crony & Reynnells, 2008).

### Methodology

This study investigated EAL materials from an ecolinguistic perspective. In the study’s context this means that, rather than assuming neutrality toward ecological implications in EAL materials’ pronouncements and lexicogrammar choices, it was geared toward “expos[ing] and draw[ing] attention to discourses which appear to be ecologically destructive” and “raising awareness of the role of language in ecological destruction or protection, informing policy, informing educational development, or providing ideas that can be drawn on in redesigning existing texts or producing new texts in the future” (Stibbe, 2014, p.119). From a pedagogical perspective, the study's approach reflected the notion that “all education is environmental education. By what is included or excluded we teach students that they are part of or apart from the natural world” (Orr, 2004, p. 12). The underlying ethical viewpoint was biocentric, a position that "extends inherent value to all living things" (Derr & McNamara, 2003, p. 19); crucially, this position is opposed to anthropocentrism. In regard to the EAL context, then, the study was infused with a sense of criticality (Banegas & de Castro, 2016). More specifically, the study adopted a critical stance toward the political implications of declaring *who* to be a pronoun appropriate only for humans following the biocentric viewpoint and the observation of Pennycook (1994) that "pronouns are deeply embedded in naming people and groups, and are thus always political in the sense that they always imply relations of power" (p. 175). In the case of *who*, this includes the naming and 'othering' of nonhuman animals in ways that enforce an anthropocentric perspective.

The study utilized a mixed-methods approach to data collection and analysis, including corpus linguistics methods in which categorical frequency data and the analysis of concordance lines played central roles. Corpus linguistic techniques are now used in a wide variety of social science fields and disciplines. For example, Poole (2016; 2017) has applied corpus linguistic techniques to ecological discourse analysis with interesting results.

The study investigated three main research questions:

- 1) According to online English language learner's dictionaries, is the use of the relative pronoun *who* acceptable in reference to nonhuman animals?
- 2) Is the use of the relative pronoun *who* in reference to nonhuman animals attested

in reading materials for English as an Additional Language learners, in this case graded readers, and does the level of attestedness align with the learner's dictionaries' judgments regarding *who*?

- 3) If the relative pronoun *who* in reference to nonhuman animals is attested in the graded readers, then are contextual elements such as anthropomorphism, known or assumed sex, or individuality of the nonhuman animal(s) present in any of the occurrences?

The first question was exploratory; it involved data collection and set a baseline of information for later analyses. Question 2 was investigated within the context of Question 1's findings; it involved further data collection along with quantitative and qualitative corpus analysis done in comparison to Question 1's findings. Question 3, subsequently, was investigated within the context of the findings of Questions 1 and 2.

For the first research question, data was collected from online learner's dictionaries. Learner's dictionaries were chosen as sources because it was thought they are a well-known, widespread, and common reference resource for EAL learners; that is, they are a kind of reference that many learners would be familiar with and have contact with. Modern learner's dictionaries incorporate findings from corpora (Nurmukhamedov, 2012) with the inference being that this makes them better able to describe language as it is actually used (Church, 2008). Corpus-informed learner's dictionaries should be able to present accurate usage information and/or example sentences of *who* being used with nonhuman animal antecedents because it has already been established that the construction is readily available in mainstream corpora such as the BNC (Gilquin & Jacobs, 2006). A convenience sample of six well-known online learner's dictionaries was selected. They are listed in Table 2 in the Results section. The notion that these six online learner's dictionaries are well-known was inferred from their description as major monolingual learner's dictionaries on the English Wikipedia page for learner's dictionaries (Monolingual learner's dictionary, n.d.). In each dictionary the entry for *who* was checked and the definitions corresponding to the use of *who* as a relative pronoun were recorded. For comparison purposes, the entries and definitions for *which* that corresponded to its use as a relative pronoun were also examined. From this data, a hypothesis was formed about how often the target construction should appear in the corpus according to the learner's dictionaries' judgment of the acceptability of using *who* in reference to nonhuman animals. *That* (in the position of *who* or *which*) was excluded from consideration for comparison because it is arguably not a relative pronoun, but is instead a subordinator (Huddleston & Pullum, 2002). These data are displayed in Table 2 in the Results section.

The second research question involved corpus linguistics (CL) techniques and the analysis of graded readers in the context of the findings from Question 1. CL is a set of procedures or methods in which data from corpora (large, electronic collections of systematically collected text) are analyzed by means of specialized software (McEneaney & Hardie, 2012). One of the main affordances of corpus-based research is the ability to analyze large amounts of text in ways that would be impossible or unfeasible otherwise. Language patterns that would go unseen or unremarked upon in traditional forms of analysis are made

visible and thus analyzable.

The choice of using a graded reader corpus to represent EAL reading materials was influenced by the fact that graded readers generally are not intended for learners in specific geographic locations, but rather are written for a global audience. Thus, they are EAL reading materials that enjoy wide geographical distribution. They also feature different grades, or levels, and thus are distributed among learners diverse in proficiency. So, it was thought that a graded reader corpus could represent EAL reading materials that many learners would be familiar with and would have contact with.

A collection of graded readers was downloaded from the Lextutor website (Cobb, n.d.). Normally, one would attempt to collect texts for a corpus that are representative of an entire population. However, for the purposes of this study, the texts in the corpus are a convenience sample of graded readers readily available in electronic format. The corpus was cleaned, a process of removing or isolating data in the text files that would interfere with analysis, and then uploaded to the Sketch Engine (Kilgarriff et al., 2014), an online suite of corpus analysis tools. The corpus consisted of 2,164,164 words in 101 readers, from three publishers, and across a full range of reader levels. All queries performed on the corpus were conducted in the Sketch Engine environment.

Before any corpus queries could be made, appropriate search parameters needed to be identified. As the target construction was *[x] who*, where *[x]* represents nonhuman animals, terms that could be used in place of *[x]* to find any occurrences of the target construction needed to be identified. A list of 424 search terms that could find occurrences of common names for animals in singular (e.g. dog, bird), plural (e.g. cats, pigs), and group forms (e.g. flock, pride) was developed. It is important to recognize that 424 search terms is not identical to 424 words. In fact, 424 search terms meant searching for far more than 424 words that could fit the *[x] who* pattern, including some words which would not be referencing nonhuman animals at all. For example, one search term was *herd.\**. The syntax of *herd.\** instructs the Sketch Engine software to find occurrences of *herd* with any number of characters following it in the corpus. Thus, searching for the construction of *herd.\* who* would find any occurrences of *herd who*, *herds who*, *herder who*, *herders who*, etc.

All queries searched for the nonhuman animal terms followed immediately to the right by *who*. The concordance lines generated by the queries were printed and manually checked to confirm they matched the target construction. Concordance lines that did not match the target construction were removed. The remaining lines, meaning the lines where *who* was used as a relative pronoun and the antecedent was a nonhuman animal, were kept and recorded. These concordance lines can be found in Table 3 in the Results section. Queries were run to also find occurrences of *which* with nonhuman animal antecedents. This was done so the relative frequencies, or proportions, of the two constructions in the corpus could be calculated in terms of each other.

In determining whether the learner's dictionaries and the graded readers were in alignment, comparisons were made between whether the learner's dictionaries did or did not allow the target construction and whether the target construction was attested or not attested in the graded reader corpus. The criteria and the possible evaluations of alignment are displayed in Table 1.

Table 1. *Alignment evaluation criteria*

		<i>'Who' is allowed? (dictionaries)</i>	
		Allowed	Not allowed
<i>'Who' is attested? (corpus)</i>	Attested	<i>Aligned</i>	<i>Not aligned</i>
	Not attested	<i>Aligned</i>	<i>Aligned</i>

Statistical analysis comparing the expected (based on the learner's dictionaries) and observed (based on the corpus data) relative frequencies in the form of the exact binomial test was also considered. However, it was judged that such a test was not needed due to certain properties of the null hypothesis and the observed data. The outcome was clear even without performing the test. As will be shown in the Results section, the learner's dictionaries did not allow for the target construction, so the null hypothesis would have been  $H_0: k = 0$ , where  $k$  is the number of target construction occurrences in the corpus; in other words, under the null hypothesis any occurrence of the target construction would be predicted to be impossible. The alternative hypothesis would be  $H_1: k > 0$ . In this scenario, any observed occurrence of the target construction, even just one, would result in an exact binomial of zero, lower than any possible critical value. Thus, since the target construction was observed in the corpus data, which data are presented in the Results section,  $H_0$  was automatically rejected, and the test was deemed unnecessary if not inappropriate.

Finally, the third research question involved analyzing concordance lines individually for the purpose of exploring whether contextual elements possibly triggering the use of *who* with nonhuman animal antecedents could be identified. This part of the methodology was more qualitative. Three potentially triggering elements identified in earlier studies (Gilquin & Jacobs, 2006; Gupta, 2006) that may lead to the use of *who* with nonhuman animals were selected and their presences in the graded reader texts were investigated. This involved looking beyond the immediate concordance lines and exploring "the way that linguistic features *cluster together* to model the world in particular ways" (Stibbe, 2012a, p. 5). In other words, the use of *who* versus *which* does not exist in a vacuum, but must be part of a wider collection of cues that are present in a discourse or text.

In particular, this analysis took the form of investigating 1) whether the nonhuman animals found in the target constructions were presented anthropomorphically, i.e. they displayed traits or behaviors characteristic of humans, such as speaking a human language, or naturalistically, i.e. as they appear in the natural world; 2) whether the sex of the nonhuman animals in question was known or assumed in the text; and 3) whether the nonhuman animal terms in question indicated an individual nonhuman animal or a group. This analysis was done to the occurrences of *who* with nonhuman animal antecedents. It was thought that this analysis might shed light on how certain elements of the discursive representation of nonhuman animals (Cook, 2015) give rise to an "implication of personality" (Oxford, 1989, p. 290) in nonhuman animals. Or, as Gilquin and Jacobs (2006, p. 93) claim, since *who* "typically is used to refer to human beings, we can expect it to give nonhuman animals some sort of human-like status", and this human-like status may be reflected in the presence or



absence of the selected elements. These data are presented in Table 4 in the Results section.

## Results

### Results of Research Question 1

All of the learner's dictionaries which were consulted indicated that the relative pronoun *who* is to be used with individual persons or groups of people, and although nonhuman animals are not specifically mentioned or denied personhood in any of the *who* or *which* entries, learners would likely understand the entries as meaning *who* is restricted to humans and *which* is for all nonhumans. While it may be argued that nonhuman animals can have personhood, in EAL contexts this argument assumes a sophisticated understanding of the terms *person* and *personhood* on the part of the English language learner which eludes many expert and native speakers of the language and is not reflected in the vernacular understanding of the term *person*. Such an argument is further, and severely, undercut by the presence in one dictionary of a general entry, below the learner-oriented entry for *who*, which explicitly states that the relative pronoun *who* is to be used with human beings. Thus, as an answer to the question of how do learner's dictionaries treat the use of the relative pronoun *who* with nonhuman animals as antecedents, we can say that they treat it as unacceptable. The data from the learner's dictionaries are displayed in Table 2.

Table 2. *Who-usage in learner's dictionaries*

Dictionary	<i>Who</i> entries	Accepts <i>who</i> with nonhuman animal antecedents?
Cambridge Learner's Dictionary	- used at the beginning of a relative clause to show which person or group of people you are talking about  - used to give more information about someone	No
Longman Dictionary of Contemporary English Online	- used after a noun to show which person or which people you are talking about  - used, after a comma in writing, to add more information about a particular person or group of people that you have just mentioned	No
Merriam Webster Learner's Dictionary	- used after a noun or pronoun to show which group of people you are talking about  - used to introduce an additional statement about someone	No

	who has already been mentioned	
Oxford Advanced Learner's Dictionary	- used to show which person or people you mean - used to give more information about somebody	No
Macmillan English Dictionary	- used for adding information that shows which person or type of person you are talking about. It is more usual to use 'that' to introduce this type of relative clause  - used for adding more information about a person when it is already clear which person you are talking about	No
Collins English Dictionary	- You use <i>who</i> at the beginning of a relative clause when specifying the person or group of people you are talking about or when giving more information about them  - [general entry] used to introduce relative clauses with antecedents referring to human beings	No

Results of Research Question 2

Although the learner's dictionaries did not allow for the target construction, it was in fact attested 13 times in the graded reader corpus (Table 3). Thus, according to the criteria established in the methodology (Table 1), the finding is that the learner's dictionaries and the graded readers are not in alignment regarding the target construction.

Table 3. *Who-usage concordance lines*

No.	Concordance line	Title	Publisher	Level
1	...the angry noise of a (tiger who) has not eaten.	The Jungle Book (Green)	OUP	2
2	...only one other (animal who) can come...	The Jungle Book (Green)	OUP	2
3	...the (tiger who) killed cows and...	The Jungle Book (Green)	OUP	2
4	He'll have to fight other (stallions who) are following the females.	Horse Whisperer	Pearson	3
5	...the thin, miserable (horse who) had come to	Who sir? Me	OUP	3

	them.	sir?		
6	...a young, strong (horse who) wanted to win.	Reflex	OUP	4
7	...a young (horse who) could run well.	Reflex	OUP	4
8	...if I were a (horse who) was clever...	Brat Farrar	OUP	5
9	...telling me about a (monkey who) juggled with...	Decline and Fall	OUP	6
10	...and the (butterfly who) had stopped to talk...	Ironing Man	CUP	3
11	The small coloured (fish who) lived among the rocks...	Staying Together	CUP	4
12	I help (horses who)'ve got people problems.	Horse Whisperer	Pearson	3
13	...except for the (rats who) looked at...	Dr. Zhivago	Pearson	5

Results of Research Question 3

An analysis of individual concordance lines featuring *who*-usage with animal antecedents was also carried out. This exploratory analysis looked at three possible factors influencing the choice to use *who* with nonhuman animal antecedents. The first factor analyzed was whether the nonhuman animal in question was presented anthropomorphically (i.e. with human-like traits or behavior) or naturalistically (i.e. as the animal appears in nature). The second factor analyzed was whether the sex of the animal in question was known or assumed. Finally, the third factor analyzed was whether the animals in question were individuals or groups. In some cases, these analyses involved looking at a wider context than available in the concordance lines presented in Table 3. In the *who*-usage concordance lines, 5 of 13 lines featured animals presented anthropomorphically (38%); 7 of 13 lines featured animals whose sex was known or assumed in the text (54%); and 9 of 13 lines featured animals as individuals (69%). These results are presented in Table 4.

Table 4. *Presence of factors potentially influencing who-usage*

Is the factor present?	1	2	3	4	5	6	7	8	9	10	11	12	13	%
1. Anthropomorphism: Yes (Y) or No (N)	Y	Y	Y	N	N	N	N	Y	N	Y	N	N	N	38
2. Known or assumed sex: Yes (Y) or No (N)	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	54
3. Individuality: Yes (Y) or No (N)	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	69

## Discussion

There are several pedagogical implications raised by the findings. As was mentioned in the Results section, the learner's dictionaries examined do not judge *who*-usage with animal antecedents to be acceptable, and thus, to a degree, implicitly support the erasure (Stibbe, 2012a) of nonhuman animals. This lack of acceptance seems perplexing because learner's dictionaries use corpora to inform their contents, and in both mainstream (Gilquin & Jacobs, 2006) and EAL (this study) corpora the target construction was well-attested. The learner's dictionary lexicographers and editors may have decided to exclude data demonstrating the use of the target construction found in their corpora (assuming it was found) from consideration or fear of providing potentially confusing lexicogrammar information to learners; in other words they may have been trying to "[meet] the security needs of beginning language learners" (Celce-Murcia & Larsen-Freeman, 1999, p. 3) by describing *who* as only to be used for humans. However, this argument is severely undermined because *who* is in fact used with nonhuman animals in the graded readers, suggesting that graded reader authors and editors do not have any such concern. Furthermore, the *who*-usage construction was not only attested in the graded reader corpus, but was actually more frequent than the *which*-usage with nonhuman animal antecedents, making it more likely that learners would encounter the target construction (in this set of graded readers) than the *which*-usage alternative.

This also means that despite occurrences of *who* with nonhuman animals in reading materials aimed at English language learners, the reference materials (learner's dictionaries) offered a contradicting judgment on usage. A strict 'rule'-based interpretation of this situation might accept the authority of the learner's dictionaries and conclude that the graded readers are full of lexicogrammar errors. However, I take the view that language found in the graded readers, which have presumably been edited for appropriateness for EAL learners, constitutes cases of actual usage in an EAL context, while dictionaries are trying to describe usage learners will encounter or need to produce. If they are not in alignment (and they are not in this case), then I believe the descriptions found in the learner's dictionaries are incomplete; that is, the 'rules' do not match the reality (Celce-Murcia, 1999). A short note in the dictionaries' entries that *who* is sometimes used with nonhuman animals would suffice to bring the materials into alignment and reflect more accurately how *who* is actually used. It raises questions about what other information might be presented in learner's dictionaries that does not align with language that learners may, and may be likely to, encounter. Future research could explore how decisions are made about what to include (or exclude) in learner's dictionaries entries, or how learner's dictionaries may be brought into alignment with the language learners may actually encounter in mainstream and EAL texts.

The fact that the target construction is found in the corpus does raise positive pedagogical implications, too. For example, teachers can exploit the discrepancy between the dictionaries and the usage found in the graded readers to engage learners in Critical Language Awareness (CLA) activities. CLA posits that language use is not neutral, but rather that it is part of a wider social struggle (Fairclough, 1992). CLA activities are often geared toward

political and social implications of language choices, but they may be aimed at ecological concerns as well. Explicit consciousness raising (Svalberg 2007; 2016) tasks could be arranged where, after reading a dictionary entry describing that *who* is to be used for ‘people’, learners are presented with ‘found’ examples of the use of *who* with nonhuman animal antecedents and given instructions to formulate ideas about why *who* was used. Such activities could be done using Guided Induction methods where learners follow a four-step model (Flowerdew, 2009):

1. Illustration: looking at language data.
2. Interaction: discussing and sharing observations.
3. Intervention: optional step to provide advice or suggestions.
4. Induction: formulating one’s own explanation.

A different example of how educators might apply these findings toward consciousness raising is if a class is reading a text and the target construction occurs, the teacher could take the opportunity to address the construction themselves or solicit opinions of why the author used *who* with a nonhuman animal antecedent. The kind of consciousness raising such activities entail is both linguistic and ecological: Learners would think about both the language issues involved in making lexicogrammar choices and the way nonhuman animals are described, presented, and conceived of.

For EAL learners who are interested in animal rights or ecological issues, or who may become interested in the future, strictly following the information found in learner’s dictionaries would limit their ability to make conscious, meaningful choices about how they talk about nonhuman animals in English. English learners can deepen their investment (Norton Peirce, 1995; Norton, 1997) in learning practices when they believe they are learning personally meaningful things that align with their personal goals and identities. Becoming aware that language choices in English such as *who*-usage with nonhuman animal antecedents may be acceptable is particularly pertinent for EAL learners because it could expand their ability to comprehend subtle nuances in the language, participate in nonhuman animal and ecology-related discourse, and notice other ways in which the social and natural worlds and language act upon each other. It could also lead them to consideration and insight regarding ecolinguistic implications in their first (or other) languages. Learners who have companion animals or pets would also benefit as they could learn to talk about their companion animals or pets in terms that both more closely reflect their social and emotional connections and resemble the ways expert and native speakers of English talk about companion animals and pets.

Some concordance lines also exhibited interesting features of usage outside of direct EAL pedagogical implications. For example, when considering whether anthropomorphism influences the likelihood of *who*-usage, it may be the case that consciousness projection from a human to an animal requires *who* to be used, or at least it becomes very likely. Although the sample size is too small to make strong claims, take for example concordance line 8: “...*if I were a (horse who) was clever...*”. It seems that by projecting human consciousness into the imagined horse, *who* becomes the natural relative pronoun choice.

However, it is important to note that there were more occurrences of *who*-usage with

naturalistic animals than anthropomorphic ones, so anthropomorphism may be an influence, but it is not necessarily a determining factor. Likewise, the analyses of sex knowledge/assumption and individuality showed that those factors were present in some occurrences, but were not necessarily determinative. In addition, while a majority (69%) of *who*-usage occurrences featured at least one of anthropomorphism, knowledge/assumption of sex, or individuality, four of the occurrences featured none of those factors. Thus the findings related to the third research question are inconclusive as to whether the selected elements triggered or affected the choice to use *who*. This could be interpreted as revealing there are several other elements that may influence *who*-usage with nonhuman animals. It may, in fact, turn out that *who*-usage decisions are made solely at the discretion and preferences of each language user. Concentrated research on the factors that trigger *who*-usage with nonhuman animals could be conducted in the future, shedding light on the environmental, psychological, cognitive, social, and linguistic factors that influence the decision to use *who* with nonhuman animals.

There are some caveats regarding the methods, data, and findings. First, there are some things that should be noted about the corpus and the corpus queries. For instance, the number of occurrences of *who*- and *which*-usage with animal antecedents in the corpus may be undercounted. This is due to the fact that the corpus queries looked for patterns of the nonhuman animal terms followed immediately by *who* or *which*. A larger window to the right of the nonhuman animal terms could result in a higher number of occurrences. In fact, while investigating whether the sex of the monkey from concordance line number nine ("...telling me about a [monkey who] juggled with...") was known or assumed in the text, I found a line where *monkey* (the antecedent) and *who* (the relative pronoun) were separated by several words ("...there is a [monkey at the zoo who] juggles..."), and thus it was not found in the corpus queries. Another factor that may indicate an undercounting of the construction in question is that the relative object pronoun variant *whom* was not included in the queries. Furthermore, the search list of nonhuman animal terms was not exhaustive. Scientific names for nonhuman animals, for example, were not included in the queries. Moreover, the analysis is naturally restricted by the size, and perhaps the representativeness, of the corpus. Whatever conclusions are derived from the corpus data, they are only applicable as far as the corpus accurately represents the variety of language it is supposed to represent. This may affect interpretation of the frequency data of the target construction and of influencing factors such as anthropomorphism, knowledge/assumption of sex, and individuality.

Second, any conclusions drawn from this study need to be tempered by the limited scope of the study. This study focused on a single grammatical feature in certain EAL materials. A more complete study would consider other constructions with similar implications, such investigations into *he/she* versus *it* or the potential use of singular *they* versus *it* when the sex is unknown, and a broader sample of materials. A more in-depth study may also do more to situate the target construction within other features of the texts and discourses, or investigate the target construction's interplay with other linguistic mechanisms that serve to construct nonhuman animals in particular ways. This study may contribute to our understanding of how nonhuman animals are treated linguistically and how that treatment is manifested in EAL materials, and it may inform or support other research, but it should not

be confused for such research or used as a basis for claims outside of its scope.

### Conclusion

As to whether online English language learner's dictionaries deemed the use of the relative pronoun *who* in reference to nonhuman animals to be acceptable, I found that they consider it unacceptable, and may be a case of implicit support for the erasure (Stibbe, 2012a) of nonhuman animals by concealing “the unique nature and complexity of the beings being represented” (Stibbe, 2012b, p. 49). As to whether the target construction is attested in the graded readers, I found that the target construction is in fact attested at least thirteen times in the graded readers and so determined that the learner’s dictionaries’ judgment regarding the use of the relative pronoun *who* with nonhuman animals was not in alignment with actual usage in the graded readers. As with mainstream corpora (Gilquin & Jacobs, 2006), the corpus utilized in this study found the target construction to be fairly commonplace. As to whether contextual elements such as anthropomorphism, known or assumed sex, or individuality of the nonhuman animal(s) were present in the occurrences of the use of the relative pronoun *who* with nonhuman animals in the graded reader corpus, I found they were often present, but they may not have been determinative, and several examples were found where none of the aforementioned elements were present. Thus, whether they were in fact triggers could not be concluded from the data.

Environmental and ecological education in EAL contexts is often analyzed in terms of themes and content (e.g. Jacobs & Goatly, 2000; Haig, 2003; Stibbe, 2004; Xiong, 2014), but ecological implications in more mundane (in EAL contexts) matters such as conventional language patterns is overlooked (Schleppegrell, 1997). In particular, ecological, social, and political implications are embedded in such mundane matters as pronoun patterns (Pennycook, 1994). This study demonstrates that there is value in investigating lexicogrammar patterns in EAL texts and discourses regardless of the themes and content because the acceptability of conventional and alternative constructions with embedded and covert ecological implications is contested within EAL materials. In other words, much of the value of this study arises from illuminating the contradiction of the ‘rules’ regarding the target construction articulated in the learner’s dictionaries and the attestedness of the target construction in the graded readers.

Although the scope of this study is limited by its focus on a single grammatical feature, I hope that it demonstrates how linguistic and ecological implications and issues can be found in EAL materials even when the content is not eco-centric; that is, ecological implications are embedded in the mundane lexicogrammar choices presented in EAL materials. The question of using the relative pronoun *who* in reference to nonhuman animals in EAL contexts had not been explored in prior research. The findings in this study have implications for materials development, pedagogy, and consciousness-raising in EAL contexts. The findings also support a judgment of acceptability for *who*-usage in reference to nonhuman animals, which is a lexicogrammar construction that may contribute to limiting the ways that humans distance themselves from other animals. Future research can expand upon this study’s findings by looking at the ecological implications of the target construction in

other EAL materials and contexts, psycholinguistic impacts of referring to animals using *who* or other pronouns, and by looking at other lexicogrammar choices that may have ecological consequences in EAL materials.

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