The interpretation of Generics and Universal Quantifiers in Spanish-speaking Children

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Abstract

Among the many linguistic phenomena that can be found in everyday discourse, one that has garnered extensive linguistic, and psychological attention is genericity. Generics are statements such as “cats have whiskers” or “birds fly”, which not only do they express generalisations concerning kinds, but they are also used to convey general knowledge about the world, including beliefs, stereotypes and prejudices. They are prevalent in child-directed speech too.

Generic statements possess two characteristic properties that distinguish them from universally quantified statements: first, generics tolerate exceptions and, second, they are not associated with any overt quantifier or determiner. This investigation examined whether Spanish children appreciated these features, using a Truth Value Judgement Task (TVJT). In this study, we have focused on the comprehension of generics and universally quantified statements of 4/5-year olds (N=31) and 8/9-year-olds (N=24). Participants judged generic statements with characteristic properties like *Los caballos tienen cuatro patas* (‘Horses have four legs.’) or statements with the universal quantifier “all”, such as *Todos los caballos tienen cuatro patas* (‘All horses have four legs.’), both preceded by a picture representing an exception to the generalisation, which should make participants reject a universally quantified statement while accepting the generic counterpart.

We discuss the obtained results in the context of influential proposals by Leslie and colleagues, who argue that generic statements express a default mode of generalisation. We argue that our results do not clearly support these proposals.

Keywords: genericity, generics, quantifiers, language acquisition, Spanish.

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"Whereas last year I was forced to confess that we knew

almost *nothing* about generics, this year I am pleased

to report that we know almost *something* about them."

(Lawler 1973: 320, emphasis added) (as cited in Declerk, 1987:143)

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1. Introduction

A fairly prevalent phenomenon that one can observe in natural languages is genericity. Statements such as "Ravens are black", "Birds fly", "Snakes are reptiles", "Bears eat honey", and "A cat lands on its feet" constitute all generic statements.[1] They are the sort of sentences that we produce and understand in run-of-the-mill conversation. We are constantly relying on those constructions to convey information to one another. Generic generalisations are characteristic for making reference to kinds rather than (particular) individuals (Carlson 1977; Krifka, Pelletier, Carlson, ter Meulen, Chierchia, & Link, 1995) —for instance, in some of the cases above, the kinds *bird* (*Aves*) or *cat* (*Felis catus*). They enable language users to talk about classes, types or kinds of individuals. Not only are they used to expressing or referring to characteristic or essential properties of kinds —not necessarily statistically prevalent —, but much of our knowledge of the world is also naturally expressed by these generic sentences including beliefs, stereotypes and prejudices (e.g. "Women talk more than men") (Lazaridou-Chatzigoga, 2017). Generic generalisations are fascinating for a number of reasons. They generally capture characteristic or essential properties, express timeless truths and seem to be context-free. But, above all, generics seem to be one of the building blocks of human cognition (they are central to human reasoning[2]) as they show our capacity to organise our perceived reality and/or experience of the world into classes and allow us to conceptualise the properties of kinds and describe regularities. What makes generics especially intriguing is the fact that they help us understand how we encode information about the world (Pelletier, 2010).

Genericity has long attracted the interest of linguists (since the '70s) (Lazaridou-Chatzigoga, Katsos & Stockall, 2015), yet it still belongs to those areas of linguistics

[1] In the interest of concise terminology, I will henceforth use the term "generic", "generic statement" (or GS for short) or "generic generalisation" to mean (characterising) sentence containing a generically interpreted bare plural, indefinite singular, definite singular or definite plural, thus any DP that is interpreted generically. In addition, I will employ the term "quantified statement" or "universally quantified statement/generalisation" (or UQS for short) to refer to sentences/ statements containing the universal quantifier "all". A further terminological note: "quantificational generalisation" is a commonly-used notion in psychology, but not in linguistics. From a linguistic point of view, we would not refer to a generalisation in the case of the universal quantifier, we would rather use "universally-quantified statement". Both terms are used interchangeable throughout the discussion.

[2] According to Prasada (2000) and Prasada & Dilligham (2006), generic concepts are the basis of category (kind)-based induction, explanation, prediction, and deontic judgments.

which are poorly understood and extremely controversially disputed.[3] The main concern for semanticists has been to determine how we are to assign truth-conditions, what their truth- and licensing-conditions really are. Given that such statements occur frequently in everyday speech, and are frequently used in ordinary child-directed speech (Gelman at al. 1998; Pappas & Gelman, 1998) — they seem a fundamental component in the language that children hear as they mature given that maternal speech is filled with them, children hear them on a daily basis (Nickel, 2017) — , it is not surprising that generics have interest beyond natural language semantics, indeed, philosophers of language, and more recently, cognitive and developmental psychologists have focused on them as well.

Generic statements are fascinating, but they are particularly interesting when compared to other types of generalisations such as overtly quantificational generalisations, in particular universally quantified statements (Lazaridou-Chatzigoga & Stockall, 2013). Quantificational generalisations are expressed in quantitative terms. Statements such as "all cats eat mice" and "some lions live in cages" make reference to the quantity that satisfies the relevant property, they specify how many members of the kind have the property at issue. In a semantic theory, overtly quantificational statements can be relatively easily reducible to set-inclusion relations and can be characterized in quantitative, statistical terms (Barwise and Cooper, 1981). Generic generalisations, in contrast, seem to reflect richer and more complex relations between the kind and the property, which cannot be reduced to purely formal, quantitative terms. They are thus difficult to analyse from a semantic perspective because they cannot be easily described in set-theoretic terms. They have resisted precise formalisation (Carlson 1977; Leslie 2007; Lazaridou-Chatzigoga, 2017). The phenomenon of genericity, thus generic statements (or GS for short), as well as its comparison with overtly quantificational statements constitute the object of study of this paper. To simplify matters, we will focus solely on the comparison between GSs and universally quantified statements (or UQS for short, i.e. *todos/as* — all —). Let us briefly address the issue of the differences between UQSs and GSs more in depth.

[3] Nickel (2017: 459) described the situation rather accurately: "Writing in 2016, we can say that the study of generics is still in its very early stages. Fundamental questions are left open: Which phenomena should be treated together? Which separately? Which framework or frameworks are most promising?". Although we have certainly advanced, still more work needs to be done.

Generic statements are characteristically associated with two properties or features that (essentially) distinguish them from universally quantified statements: first, they allow for exceptions —very few claims about generics are widely agreed upon, one of them is arguably their exception-tolerance— and second, they are not associated with any overt quantifier or determiner (Lazaridou & Stockall, 2013). Take for instance the sentences in (1) and (2), and (3) and (4) below:

(1) Cats have whiskers.
(2) Birds fly.

(3) All cats have whiskers.
(4) All birds fly.

If we compare GSs with the corresponding UQSs, we see that (1) and (2) can be truthfully uttered even in the face of exceptions, that is, (1) and (2) are true despite the existence of cats with no whiskers and flightless birds like penguins, emus, and ostriches, but the situation changes in the case of (3) and (4). We cannot truthfully state (3) if there is one cat that does not have whiskers and in like manner, the UQS in (4) is false given the existence of exceptions such as the above (Lazaridou-Chatzigoga, 2017).

Intriguingly, there is much variation in the percentage of exceptions generics permit, as we can observe by comparing (5) and (6) below. (5) seems to be true despite the fact that the property is truthfully predicated of a tiny proportion of mosquitoes, specifically less than 1% of mosquitoes actually carry the virus (Hayes et al. 2005), while (6) is false, thus does not qualify as true generic, even though presumably more than half of all books published are indeed paperback (it seems that it is at least statistically true) (Shaffer, 2002). Hence, the tolerance of exceptions by generic statements seems to be a property that has proved especially challenging to account for (Lazaridou-Chatzigoga & Stockall, 2013; Lazaridou-Chatzigoga 2017).

(5) Mosquitos carry the West Nile virus.
(6) Books are paperbacks.

Another main difference between GSs and UQSs is that whereas the latter involve overt operators, such as *all* in (3) and (4), the former, as in (1) and (2), is not tied to any overt operator. In (2) a bare plural form flags that the statement is generic, so we may consider generics as determinerless statements. Yet, as we will discuss later on, generics are not limited to that particular form, that is, this is not the only option to express

genericity, generics manifests themselves in other constructions too (Lazaridou-Chatzigoga & Stockall, 2013).

As becomes obvious from the above discussion, two issues seem to emerge which form the so-called "generic puzzle":

(7) GSs are exception-tolerant, whereas UQSs are not.
(8) The absence of an overt quantifier in the case of GS presents the conundrum of where the generic interpretation comes from.

The characteristic property of tolerance of exceptions seems to be closely associated with another feature of generics, namely the fact that they strictly resist contextual restriction or narrowing, they are immune to context. As stated in Krifka's (1987: 7) seminal work, generic statements, unlike quantified statements, *cannot* be contextually restricted (see also Krifka et al. 1995; Lazaridou- Chatzigoga & Stockall, 2013: 326). They are not pinned down to a specific context; instead, they hold generally over time and situations/ events. For instance:

(9) Context: There are lions and tigers in this cage.
a. Every lion is dangerous. (*Can* mean 'Every lion in this cage is dangerous')
b. Lions are dangerous. (*Cannot* mean 'Lions in this cage are dangerous')

Thus, given a discourse context like the one in (9), the nominal argument of the quantifier *every* (in this case, *lion*) can be felicitously interpreted as "every lion in this cage", yet this is not a possible interpretation for the generic bare plural form *lions*, suggesting that generics cannot undergo domain restriction.

Nevertheless, recent work (Nickel, 2008; Sterken, 2015) argues that generics may be subject to contextual restriction after all. One of the best examples arguing for the context-sensitivity of generics comes from Nickel (2008: 644):

> Consider (10).
>
> (10) Dobermans have floppy ears.
>
> The important fact about dobermans is that they are born with floppy ears that breeders then cut to given them the pointy shape we are familiar with. In the context of evolutionary biology, (10) is true. The text (11) certainly sounds acceptable.
>
> (11) Some breeds of dogs have evolved to focus on their hearing. These breeds have pointy ears. Dobermans, however, mostly rely on their sense of smell, which is why Dobermans have floppy ears.

> However, in the context of a discussion of dog breeding, (10) seems clearly false, as the text (12) illustrates.
>
> (12) While Labradors and golden retrievers have floppy ears, dobermans don't. Dobermans have pointy ears.

If one looks more closely at the examples that for instance Sterken (2015) discusses (other four additional examples along the lines of the dobermans example), we would question whether generics' context sensitivity would not be tight only to some minor specific cases and not to the majority of generic statements (Lazaridou- Chatzigoga, Stockall & Katsos, 2019).

Furthermore, generics are statements that express regular patterns of occurrence of certain kinds of events, rather than singular events, and express non-accidental properties (Dahl, 1975) or "essential" properties of a kind (Gelman, 2003) or properties that bear a "principled connection" to a kind (Prasada & Dillingham, 2006). As a consequence, they are treated as eternal or timeless truths with a law-like or nomic nature, as they do not depend on the specific context in which they are uttered but rather on the properties that determine the kind. Contrariwise, from a logical point of view, in order to determine the truth or falsity of a quantified statement, one needs to look at the set quantified over (Lazaridou-Chatzigoga & Stockall, 2013).

Much related to this previous property, [4] another feature that seems to be closely linked to their law-like character, and is often regarded as essential, is their temporal unboundedness. It has been observed that generics cannot be felicitously modified by adverbs like "today" that denote particular temporal locations whereas sentences that report single episodes seem to be totally acceptable as observed in the contrast between (13) and (14) (the question mark indicates oddness). Crucially, someone evaluating a generic statements like (15) needs no information about the context of utterance, as the truth or falsity of the generic statements does not hinge on any specific state of affairs (it is definitely not true or false "relative to a time interval with definite bounds"), but rather on general knowledge about dogs and their characteristics (Mari, Beyssade, Prete, 2013: 41-42):

(13) Dogs were barking at 3 p.m.
(14) ?Dogs bark today.
(15) Dogs bark.

[4] Regarding the actual properties of generics, the interested reader is referred to Lazaridou-Chatzigoga (2017) for a recent and quite extensive overview.

Note, however, that, as Marie et al. (2013) point out, the temporal unboundedness is not a well-defined property (see Declerk, 1988; Krifka et al. 1995 for more discussion).

As mentioned earlier, linguists have studied genericity for decades and, yet no consensus has been reached even about the most fundamental facts about genericity, the semantics of generics is still a matter of (heated) controversy and little or no successful theorising. Truth be told, this apparent theoretical impasse might be at least partially due to the lack of reliable data, given that these issues have often been addressed through the researcher's introspection and reflective intuition. As Lazaridou-Chatzigoga (2017:11) notes, "it is in fact surprising that the experimental investigation of generics did not start earlier." It is important to recognise, though, the recent concentrated interest in genericity from experimental and developmental psychology using experimental paradigms. In the last few years, studies such as Leslie (2008), Gelman (2010) or Leslie et al. (2011) have contributed to deepen our understanding of the phenomenon and now experimental data has proved valuable to advance a theory of generics.

Researchers in psychology have focused on a question of critical importance: "how do children acquire the meaning of GSs in the absence of dedicated words or morphemes that encode genericity?" (Dahl, 1985; Lazaridou-Chatzigoga & Stockall, 2013: 327) It should be evident upon reflection from the above observations that generics are not a simple matter. A natural question to pose concerning the acquisition of generics —taking into account the potential challenges and problems that generics may pose for acquisition[5]— would be: How does a language learner ever attain to master generics? Surely, the task of learning generics appears quite challenging — "practically impossible" in Leslie's terms— (Leslie, 2008: 19). The classic developmental story would suggest they emerge relatively late. Surprising as it may seem, according to the literature (Gelman, 2003; Roeper, Strauss, and Pearson, 2006), typically developing children acquire generics quite early on. By about two years of age children start producing

[5] It is worth reminding ourselves once more of the difficulties that generics present which are discussed in (7) and (8) above. Also, Leslie (2008) points out that there is something especially challenging and notoriously difficult for children about mastering, what Leslie calls, "associations with absence", as it would happen with the absence of an overt quantifier or determiner in the case of generics. Children (of about four or five) when presented with two stimuli that differ only in that one stimulus lacks a feature that the other has and are reinforced for answering only to the stimulus lacking the feature, they mostly fail to learn the discrimination. The interested reader is referred to Sainsbury (1973) for further discussion of the so-called "Feature Positive Effect".

generics. [6] They actually seem to use and understand generics from a very young age, as converging lines of evidence coming from both production and comprehension studies suggest (Gelman, 2010). What is more perplexing, though, is that they master them even before quantifiers (even in the absence of an articulated operator associated with them), which, empirical data suggests, occurs sometime between 3 and 4 (Gelman, 2003; Roeper, Strauss, and Pearson, 2006). It has been reported that children find generics easier to comprehend than quantified statements (Leslie, 2007). It seems that explicit quantifiers, whose semantics have resulted rather tractable for theorisation, are more challenging for young children than generics, which have baffled linguists and philosophers of language alike for decades (Leslie, 2007).

As it stands now, it becomes apparent that the acquisition of genericity needs to be studied alongside quantification. The original motivation for carrying out an experiment that once more tackles the issue of generics as compared to quantifiers stemmed from the simple observation that this issue has rarely been tackled in Spanish. Different languages employ multiple formal devices to express genericity (Lazaridou-Chatzigoga, 2017), and there are very few languages, namely English and French, which have a relatively longer tradition in the description of this phenomenon (Behrens, 2005). Put simply, most of the works to date have focused mainly on English (together with few other languages). For that reason, we set out to explore the aforementioned issues in a Romance language, namely Spanish. As mentioned earlier, little work has tackled the phenomenon of genericity in Spanish: to my knowledge, Pease-Gorrissen (1980) and more recently, in a series of collaborative articles, Ionin, Montrul and colleagues (Montrul & Ionin 2010, 2012; Ionin, Montrul, and Crivos, 2013**;** Ionin, Montrul & Santos, 2011) — although they investigate genericity and language transfer in bilinguals and language learners of English/Spanish, thus adult populations — are the ones to be found in the literature.[7]

To this end, the aim of the present research is to present new data from Spanish-speaking children in order to see whether they are able to interpret and further evaluate generic and universally quantified statements. For this purpose, we conducted a Truth

[6] Though generics are already produced by about 2-years-old (two-and-a-half) preschool children (quite spontaneously), it is between the ages of 2 and 3 that the frequency or rate of production increases greatly (Gelman, 2004).

[7] There exists however quite a long tradition of the study of the linguistic expression of generic *terms* in Romance languages, in relation to the interpretation of nominals in various syntactic structures. See, for instance, Espinal (2010) or Borik & Espinal (2012) (see also references therein), and many others.

Value Judgement Task (TVJT) experiment whereby generic comprehension is compared with comprehension of explicitly quantified statements headed by the universal quantifier *todos/as los/las Ns* — all the Ns —. By doing so, not only are we tackling the characteristic property of exception-tolerance (7), but we are also addressing the unmarkedness claim for generics (given that generics are supposed to be less marked) (8). A novel aspect of the work carried out here is that this is one of the first studies in which exceptions are made salient and presented on-line. The results obtained here may help to develop a further understanding of the issue of genericity, as well as shed some light on the acquisition of generics and quantifiers by children.

Let me make a final comment. Inspired by Lazaridou-Chatzigoga (2017), I hope to demonstrate that much progress is to be made by doing interdisciplinary work, combining the tools and perspectives of both theoretical and experimental methods/approaches in order to advance our understanding of the phenomenon of genericity. In fact, theoretically- driven and experimentally-driven research (combined) have proved particularly fruitful.

The structure of the paper is as follows: In section 1, I begin with some preliminary remarks about the definition of genericity and some facts. Then I review the theoretical and experimental literature investigating these issues, part of the discussion focuses on the problems that generics pose for acquisition and some remarks about quantifiers in acquisition. Section 2 introduces the present investigation: the research questions, hypotheses and expectations are presented before I describe in detail the experiment that was carried out. In addition, I report the results. Section 3 presents the discussion. Lastly, in section 4, I draw some conclusions and name a few future research directions.

2. Background: Previous literature and studies

2.1 Preliminaries: What is genericity?

Let us begin by trying to clarify the notion of genericity in natural language. Traditionally, two different phenomena have been referred to as *generic*. Put differently, the phenomena considered as generic fall into two different categories (Krifka et al. 1995: 2-3):

(i) sentences in which genericity comes from a DP[8] that does not refer to an individual, but instead refers to a kind (*genera*, hence generics) (what Krifka et al. (1995) called *reference to a kind*, also called *kind-referring* noun phrases) as in (16a) and (16b) below.

(ii) sentences in which genericity comes as a feature of the whole sentence (in Krifka et al.'s terms (1995) *characterizing* sentences, also called *habitual* sentences) as in (17). More precisely, propositions which describe a general property or regularity that summarises groups of particular episodes or facts, but do not refer to specific or isolated facts.

(16) a. The potato was first cultivated in South America.
b. Potatoes were first cultivated in South America.

(17) John smokes a cigar after dinner.

In (16a) the subject DP *the potato* does not state something about some particular potato, but rather about the kind Potato (*Solanum tuberosum*), type of vegetable, itself. Exactly the same holds for the DP *potatoes* in (16b), which does not refer to a group or set of potatoes, but instead to potatoes as a kind. (16a) and (16b) share the property of making assertions about kinds. (17) above does not describe an isolated or particular episode/ event, but rather a habit, some kind of characteristic event or behaviour, a species of kind of generalization over events (in this case, what John usually does after dinner) (Krifka et al., 1995).

As Krifka et al. (1995: 3) note, these two phenomena can co-occur, as in (18) below:

(18) Potatoes are served whole or mashed as a cooked vegetable.

Here, the subject DP *potatoes* can be analysed as kind-referring NP and the sentence itself as referring to a generalisation that holds for the kind *potato*. Hence, (18) expresses a generalisation about the kind as a whole and, at the same time, a regular event.

A *kind-referring* DP for instance *the potato* in (16a) above has been named *D-generic* (Krifka, 1987), as these are generally or typically (but not exclusively) expressed with the definite singular in English — they are basically expressions referring to kinds, whereas

[8] Here and throughout I will use the notion of DP for convenience (somehow descriptively), although I am aware of the fact that for instance Krifka et al. (1995) use specifically the notion of NP. Further discussion of this issue lies beyond the scope of the present paper as it involves addressing an ongoing (controversial) debate.

a sentence that combines both, as in (18) above has been termed *I-generic*, as these are often expressed with indefinite NPs like bare plurals.

In this paper, I will be concerned with sentences like "ravens are black" or "cats meow" which speak directly about members of a kind and make a general claim about them (or about the world), thus, we will focus on characterizing sentences. We will assume, along with many other theorists, that characterising sentences make a species of general claim about the world (or rather how the world is like) (Nickel, 2008). With the notion of genericity in place, let us move on to discuss arguably the most distinctive characteristic of generics which is the fact that they tolerate exceptions.

2.1.1 Generic interpretation and tolerance of exceptions

An interesting question to raise regarding generics' fluctuation in being tolerant of exceptions would be the one posed by Pelletier (2010: 8): "How many exceptions can a generic statement tolerate and still be true?", given that many generics tolerate exceptions in very puzzling ways. Using a "squish" of examples — based on different types of generics — to illustrate this issue, as Pelletier (2010) does, we see the percentage of exceptions ranging from 0% as in (19a), to a few strange, abnormal, weird cases, as in (19b), to below 50% as in (19c) and around 50 % as in (19d), and even a higher percentage as in (19e) and, finally, to 99% as in (19f), as the property is said to be predicated of less than 1% of mosquitos (all examples are taken from Pelletier (2010)):

(19) a. Snakes are reptiles.
b. Telephone books are thick.
c. Lions have manes.
d. Guppies give live birth.
e. Italians are good skiers.
f. Mosquitoes carry the West Nile virus.

Greenberg (2007) took on this issue and dealt with it in more depth, offering a novel and promising way to look into the issue of exceptions. Greenberg (2007) maintains that it is crucial to distinguish between two types of exceptions, not always clearly differentiated in the genericity literature: exceptional individuals and contextually irrelevant individuals. On the one hand, exceptional individuals would be those which in addition to not having the property denoted by the VP are considered abnormal or "nonstandard" with respect to some relevant aspect, i.e. "legitimate exceptions to *dogs have four legs*, are dogs that in addition to not having four legs are those with mutations,

those that have undergone an accident, etc." (Greenberg, 2007: 4). On the other hand, contextually irrelevant individuals[9] depend on the utterance context, and information about irrelevance is contributed by presuppositions, implicatures or real-world knowledge of the content contributed by the VP. For instance, let us consider "Ducks lay eggs". In this particular example, male individual ducks are regarded as irrelevant because the property denoted by the VP ('lay eggs') presupposes giving birth, which is only possible for mature females. This pertains to a fruitful line of research worthy of pursuit.

Here lies the difficulty for anyone trying to give a proper paraphrase of generics as quantified statements in an attempt to give a quantificational analysis of generics. Some generics might be most appropriately paraphrased with or most adequately interpreted with "all", others with "most" and others with "some" (Carlson 1977), sometimes when one tries to translate generics as quantified statements, one finds that they may not be equivalent to any of the classical quantifiers: universal, existential and so on. Carlson (1977: 43), who first identified this challenge, employed the term "fluctuating truth conditions" to designate this specific property of generics.

2.1.2 Classification of generics: A "mixed-bag" or a single phenomenon?

The variability in the tolerance of exceptions discussed above is not random, but rests on the type of property predicated of the kind. The question of what types of properties generics can express becomes thus pertinent and is not trivial. For a statement to qualify as a *generic generalisation*, the property in question must be directly related to the nature of the kind or at least, possess a certain relationship to the kind. Generics express generalisations about any type of kind, be it a natural kind, as shown in (20), an artefact kind as shown in (21), or a social kind as shown in (22) below. Most generics make claims about the characteristic or essential properties of a given kind, that is, the prominent properties or the ones that are typically associated with the kind, also the properties that bear a deep causal and explanatory relation to the kind. These properties may be truthfully predicated of all members of the kind, as in (23), of the great majority of members of the kind, as in (24), or of a minority of the members of the kind, as in (25). Additionally, as Leslie (2007) first argued, generics can express non-characteristic, not prevalent, properties of kinds, when they make claims about properties that are

[9] Recall that the traditional view of generics (Krifka 1987; Krifka et al. 1995) argues that generics are immune to contextual restriction. On the contrary, Greenberg discusses that there are generics that can be contextually restricted.

noteworthy, dangerous or striking (which is to be avoided) despite the fact that they are low prevalent, as in (26) below. Lastly, there exist generalisations that resemble generic generalisations but involve accidental properties which might be highly prevalent and seem true, at least statistically, as in (27) below, while others are highly prevalent, but seem false, as in (28) below (Lazaridou-Chatzigoga, 2017: 5):

(20) Squirrels eat nuts. *natural kind*
(21) Needles are sharp. *artefact kind*
(22) Artists are creative. *social kind*
(23) Foxes are animals.
(24) Robins fly.
(25) Deers have antlers.
(26) Sharks attack people.
(27) Cars have radios.
(28) Books are paperbacks.

2.2 Different approaches to genericity

Let us now focus our attention on how generics have been treated or the different approaches that have been adopted in linguistics (specifically in formal semantics), and in psychology (cognitive and developmental work). Prior to discussing the existent theoretical accounts, we could roughly state that in formal semantics, generics are usually analysed as quantified statements. They are usually represented by a generic operator with universal force. it is highly prevalent to treat generics as a species of quantification. In psychology, contrary to the linguistic approach, a growing body of experimental and developmental psychological studies assumes that generics are categorically different from —and considerably simpler than — quantifiers (Leslie, 2007,2008; Gelman, 2010). Those proposals claim a generic bias — founded on a dual view of cognition (Kahneman & Frederick, 2002)— and argue that generics are a *cognitive default*, among various reasons because they have priority both in terms of ontogeny (children seem to produce and understand generics earlier than quantified statements; see e.g. Hollander, Gelman & Star, 2002; Gelman, 2010) and in terms of cognitive complexity (quantified statements are misunderstood or misremembered more frequently than generics in experimental studies, see e.g. Leslie, Khemlani, & Glucksberg, 2011; Leslie & Gelman, 2012).

2.2.1 Formal semantics

Carlson's (1977) monadic generic operator

The first semantic theories ascribed the generic meaning to a VP operator. They represented a generic sentence by means of introducing a VP operator that took as an argument a verbal predicate and yielded a characterising predicate. A fundamental starting point for any discussion of genericity is Carlson's (1977) seminal study about bare plurals and kind reference. In his 1977 dissertation, Carlson proposes treating bare plurals as names of kinds and takes the logical form of generic sentences to be that of a subject-predicate form, in which there exists a generic operator *Gen* that maps episodic predicates (in his analysis, stage-level predicates) onto their habitual counterparts (in his own terms, "[t]he notion that Gn' represents a mapping from sets of stages to sets of individuals" (Carlson 1979: 59). Thus, a generic statement like the one below would have the following logical form:

(29) Cats have whiskers.

(30) Gen (have whiskers) (cats)

Krifka et al.'s (1995) modal approach [10]

Krifka et al.'s (1995) view treats generic sentences as modalised conditional statements that contain a species of "universal" quantifier. This proposal emerged as an answer to the following problem: although generics seem similar to universals, they are both more restrictive and less restrictive than universals. On the one hand, generics are more restrictive, because they are law-like. But generics are less restrictive than universals, given that they tolerate exceptions.

Modal approaches assume a phonologically not realized Q-adverbial quantifier Gen which composes with a restrictor and a matrix, and is an unselective variable binding operator (binding any variables that are free in the sentence) similar to adverbs of

[10] It is important to note that the tripartite structure (implicit in quantification), on which most of the current approaches are based, was first introduced by the foundational analysis of Farkas & Sugioka (1983) and Heim (1982) against Carlson's unitary operator *Gn*— analysed as a predicate modifier —. Their proposal, that is, that generics should be analysed as having a tripartite structure, formed the basis of the received view of generics. A major reason to propose such a structure is that it integrates intuitions of ambiguity. The classic example is "Typhoons arise in this part of the Pacific" which is ambiguous between readings and can be interpreted as either "typhoons in general have a common origin in this part of the Pacific" ,or as "there arise typhoons in this part of the Pacific" (see Krika et al. 1995: 24 for discussion; cf. Mari et al. 2013).

quantification such as *always*, *usually* , *generally*, *typically* , *sometimes* and so on (Lewis, 1975). Gen is a sentential operator and has no phonological exponent, which provides a fairly simple account for why a myriad of sentence types can obtain generic interpretations. The logical form of generics will follow the schema in (31). For instance, the logical form of "tigers have stripes" will be represented as in (32) (example taken from Lazaridou-Chatzigoga & Stockall, 2013: 328):

(31) Gen [restrictor] [matrix]
(32) Tigers have stripes.
Gen x [tiger (x)] [have.stripes (x)]

Krifka et al. (1995) propose an intensional analysis of Gen, according to which the indefinite singular generic sentences, the ones that they discuss, are interpreted as conditional sentences with the *if*-clause providing the restriction for Gen. Gen is understood as an intensional unselective universal quantifier meaning 'must' (Krifka et al. 1995). Assuming that indefinites contribute a free variable ranging over individuals (cf. Heim 1982), this variable can be also bound by the available universal quantifier. As Mari et al. (2013: 68) clarify, "Krifka et al. (1995) assume a classical modal framework in which W is a set of worlds, D a domain of entities, and ≤ an ordering source on worlds according to normality." Thus, a generic statement such as (33) is represented as follows:

(33) a. A dog barks.
b. If something is a dog, it barks.
c. $\forall$ w' ≤ w, x [dog(x,w')] [barks(x,w')]
Paraphrase: in all worlds, which are 'normal', if something is a dog in those worlds, then it barks in those worlds.

As implied from the foregoing discussion, the modal approach to generics often implies the notion of "normality", a normality condition. Hence, generics are qualified as true if it is *normal* for the members of the kind to possess the property in question (Krifka et al. 1995, Lazaridou-Chatzigoga, 2017).

Cohen's (1996,1999, 2004) probabilistic approach

The probabilistic approach first proposed and addressed by Cohen (1999) observes that it is probability rather than modality what forms the basis of the semantics of generics. This account holds that generics express probability judgements or that the interpretation of a generic is a probability judgement, at least for what he calls "absolute

generics" (e.g. "Ravens are black"). According to this theory, a generic sentence (like *As are B*) is true just in case the probability that such individual satisfies the predicated property (an arbitrary *A* being a *B*) is greater than 0.5: "**gen**(ψ, φ) is true iff the conditional probability of φ given ψ is high (specifically, greater than 0.5", that is, greater than chance (Cohen, 2004: 530). To illustrate Cohen's account, who argues that there exists a covert generic quantifier Gen, let us consider the statement "cats have whiskers" which would get the following representation:

(34) Cats have whiskers.
Gen (cat(x), have.whiskers(x)) P(have.whiskers | cat) > 0.5 (the probability of an object having whiskers given that the object is a cat is greater than 0.5)

A little reflection should suffice to show that neither the truth conditions nor the meaning of generics are simple matters, and that there is no successful account to be found in the current literature given that each account is susceptible to "systematic" counterexamples (Leslie, 2007). Numerous puzzles arise whenever we try to adopt one of those proposals.

Regarding current proposals questioning the quantificational approach,[11] Carlson (2011: 1161) writes: "while the details of various analyses that have employed the Gen operator may be called into question, it is currently a reasonably secure claim that there is *some* kind of operator akin to Gen in generic sentences". The semantics of the Gen operator nevertheless is highly and hotly disputed as we can observe for the great number of proposals that have been put forth — the following proposals are all mentioned and reviewed in Krifka et al. (1995) —: (a) relevant quantification (Declerck, 1991; Schubert & Pelletier, 1987), (b) prototypes (Nunberg and Pan, 1975), (c) stereotypes (Geurts, 1985), (d) modal interpretations (Krifka et al.1995), (e) situations (ter Meulen, 1986) and (f) non-monotonic inferences (Asher and Morreau, 1995). Further, we can add theories that postulate modal operators in possible worlds semantics (Pelletier and Asher,1997), and those that deal with the probability of the information conveyed (Cohen, 1996) (As cited in Lazaridou-Chatzigoga and Stockall, 2013).

Thus far, we have discussed some of the approaches within linguistics and we have defined a spectrum of views. For now, we will set aside the tools of formal semantics

[11] See Lazaridou-Chatzigoga's (2017: 8) overview: section 3.1.4, for more recent approaches within formal semantics which I cannot discuss in detail here because of space limitations.

and will turn to quite a different and recent approach that has emerged within psychology (which has received much scholarly attention).

2.2.2 Psychology

In contrast to the quantificational analysis of generics, we encounter Sarah-Jane Leslie's (2007, 2008) influential theory of generics. Under this view, generics are not quantificational, they are categorically different from and considerably simpler than quantification (Leslie, 2007; Gelman, 2010). The Generics-as default (GaD henceforth) view posits that generics constitute our default mode of thinking (Leslie 2007). They express our most cognitively primitive and fundamental mechanism of generalisations (the inclination/ capacity to generalise is an innately given cognitive disposition (Leslie, 2008)). This observation/idea is linked and fits with the dual ("Two Systems") view of cognition set forth by Daniel Kahneman and colleagues, which assumes the existence of two different systems of cognition (in his own words "two types of cognitive processes, which Stanovich and West (2000) labelled System 1 and System 2." (Kahneman, 2002: 450). On the one hand, we have System 1 which is a fast, automatic, effortless, associative, lower-level system; on the other, System 2 which is a slower, serial, more effortful, higher-level, rule-governed system.[12] A piece of direct evidence for the existence of two systems is the fact that they can lead to conflicting judgements. (Conflicts arise between the responses that people arrive at intuitively and upon reflection.) Leslie (2007: 395) cites Frederick's (2005) simple puzzle, as an intuitive illustration to identify the presence of two systems- and/ or to confidently conclude that the two systems are operating:

(35) A bat and a ball cost $1.10 in total. The bat costs $1 more than the ball. How much does the ball cost?

Time and again, almost everyone reports an immediate impulse or initial inclination to answer "10 cents". This answer comes to mind instantaneously and automatically just because it seems like the right answer — at least at first —. The correct response of "5 cents" requires algebraic reasoning: we know Bat +Ball = 1.10, and Bat = Ball +1, so we solve for ball and thus, we obtain 5 cents. The reasoning behind this operation is perfectly

[12] Most scientists who study human reasoning (including conditional and probabilistic reasoning) ascribe to the two systems view of cognition (intuitively speaking, there are like two minds at work, which do not always agree), one intuitive (associative system) and one reflective (rule-based system) in nature. This view seems to be all-pervasive (Sloman, 2002).

transparent to us given that we could explain our thought process to others. The initial quick, automatic, but erroneous response is delivered by System 1. The correct response is supplied here by System 2 which is arrived at by effortful, conscious, rule-governed, deliberate reasoning. Leslie (2007: 397) argues that generics are part of System 1, whereas quantifiers belong to System 2 (the categorical difference between generics and quantifiers closely parallels the dual systems view of cognition):

> The evidence surveyed so far suggests that System 1— the more primitive system —is not particularly sensitive to information about *how much* or *how many*. I suggest that generics are judgments issued by System 1. They are thus non-quantificational; they do not depend on considerations of quantity, or any such information easily captured by set-theory. They are, however, automatic, effortless, and cognitively basic. Quantifiers, in contrast, express judgments issued by System 2, the rule-governed, extension-sensitive, higher-level system. Quantifiers do depend on considerations such as *how much* and *how many*. They are thus easily describable in the terms of set-theory.

According to this view, the fact that no known language — that has been studied to date — has a dedicated, articulated (overt) generic operator comes as no surprise given that generics express the cognitive system's most primitive, default generalisations, children already possess the cognitive mechanism for these most basic generalisations at the time of language acquisition, they do not need to learn anything new and rather complex. This means that the capacity to generalise pre-dates the acquisition of language. Generics come basically for free (Leslie, 2007). Contrary to generic generalisations, effortful, non-default quantificational statements/ generalisations require overt linguistic expression. Leslie (2007) points out that in every known language, generics have the least marked surface forms and addresses Chomsky's (2000) observation that unmarked surface forms or less marked syntactic forms may be associated with cognitive defaults or default interpretations (be as it may, what is true is that Chomsky is certainly concerned with the economy of operations and considers that some operations are simpler/more complex (costly) than others). Chomsky (2000) proposes that similar phenomena occur somewhere else in language. Consider, for instance the sentence "John climbed the mountain". This can only be understood to mean that John climbed *up* the mountain, as this is precisely the default reading or interpretation. The unmarked form "climb the mountain" is never interpreted to mean *climb down the mountain*. To obtain the non-default interpretation, we must include the preposition "down", thus producing a more marked form. This may reflect a reality about our concept of climbing, by default we

conceive of climbing as climbing up (Leslie, 2007: 381). Similarly, in the case of generalisations, the unmarked generic reflects the cognitive system's basic, pre-linguistic, default manner of generalising. To actively diverge from this default, an explicit and marked quantifier must be employed. We might think of this as follows: for the conceptual system to perform a non-default generalization, it must be explicitly instructed to do so. In the absence of such instruction, the conceptual system simply employs its default mode of thinking (Leslie, 2008).[13]

Leslie (2007, 2008) develops an approach to account for the so-called "troublesome generics" like the ones below (her discussion is restricted to generics of the form "Ks are F") (those examples are mentioned before but repeated here for ease of reference):

(36) Mosquitoes carry the West Nile virus.
(37) Books are paperbacks.
(38) Birds lay eggs.

As mentioned in Section 1.1.1 above, these sentences pose special difficulties to the quantificational approach to generics, mainly because (36) is true despite the fact that less than 1 percent of mosquitoes actually carry the virus, so it seems quite an unusual or abnormal property for mosquitos to have, (37) is false even though the vast majority of books have that property and, (38) is true although less than half of the birds, actually only fertile adult female birds, a proper subset of female ducks, have the egg-laying property. If one paraphrases the above sentences, they would look similar to "some" (36), "all" (37) or "most" (38), which would make their truth conditions look "quirky". The quirky truth-conditions are not due to the semantics of generics, but because generics are more cognitively basic — they are innately given — than quantificational generalisations. The cognitive mechanism of generalisation is influenced by the notion of characteristic dimension which appears to be central to our capacity to gather information efficiently,

[13] Lazaridou-Chatzigoga, Stockall & Katsos (2019) point out that the reasoning behind this mode of thinking may be intuitive but it is based on a vague and undefined notion of unmarkedness. Indeed, as they certainly suggest, Leslie never defines what definition of markedness she relies on. They hypothesise that it is surface level overt realisation in the sense of the third notion of markedness in Haspelmath, (2006: 3): "Formal markedness: Markedness as overt coding: "In English, the past tense is marked (by *-ed*) and the present tense is unmarked."".

and the effect of how striking a property is, the "strikingness" of a property.[14] Thus, generics, which are further influenced by whether the predicated property is striking or among characteristic features of the kind, reflect our default method of generalising. Leslie (2008: 43) describes the circumstances in which generics are true or false as in (39):

(39) We can describe the circumstances under which a generic of the form 'Ks are F' is true as follows:
The counterinstances are negative,[15] and:
If F lies along a characteristic dimension for the Ks, then some Ks are F, unless K is an artefact or social kind, in which case F is the function or purpose of the kind K;
If F is striking, then some Ks are F and the others are disposed to be F;
Otherwise, almost all Ks are F.

The initial motivation for the Generics-as-default view was mainly conceptual and was based on the following observations: (i) the "unmarked" surface form of generics in terms of Chomsky (2000), (ii) evidence from congenitally deaf children who even though they have never been exposed to any form of language (either spoken or sign language), create their own symbolic gestural system, so-called "home sign" and routinely employ gestures that could be most naturally considered generics (these findings suggest that children possess generic knowledge) (Goldin-Meadow, Gelman & Mylander, 2005), (iii) a further piece of tantalising evidence from the Amazonian language Pirahã, which seems to lack explicit quantifiers, yet features generics (Everett, 2005),[16] and finally (iv) results coming from reasoning studies (Jönssons and Hampton, 2006) which might be interpreted as errors when universal statements are treated as generics.

[14] Leslie (2008: 42) cites Rothbart et al. (1978) in order to show that we, by default, are disposed to generalise striking information more readily than non-striking information, at least in high-demanding situations.

[15] Leslie (2008: 33) introduces the distinction between positive and negative alternatives as follows (Leslie takes this distinction as a psychological one):

> I propose that a powerful factor here is whether the counterinstances are *positive* rather than *negative*. The distinction I have in mind is as follows: a positive counterinstance to 'Ks are F' occurs when an instance of the kind K has a concrete alternative property, that is, when it has a positive alternative to the property F, whereas a negative counterinstance occurs when an instance simply fails to be F.

The underlying idea is that the negative counterinstances are much more likely to be admitted as exceptions than the positive ones. For instance, *Being female* has the positive alternative property of *being male*, but instead if we consider "birds lay eggs", the birds that fail to do so, simply fail to possess the property in question and thus are negative counterintances (Leslie, 2008).

[16] Note, however, that Everetts's work should be taken with great caution because it is in its early stages, so his claims need independent confirmation. Although, as Leslie (2007) affirms, Everett's work raises the interesting possibility that there may be natural languages that only possess generic generalisations.

Hence, an intriguing hypothesis presents itself. The Generics-as-Default hypothesis posits that generics are the cognitive default mechanism —generics express cognitively fundamental generalisations whereas quantified statements express more sophisticated, more taxing, less accessible generalisations — and thus makes a number of empirical predictions: generics should take precedence both in terms of ontogeny — children should comprehend and produce, thus master generics before quantified statements —and in terms of cognitive complexity (and processing costs)— quantified statements are expected to be misunderstood more frequently in experimental tasks and quantified statements require the conceptual system to inhibit (overcome) its default path— (Lazaridou-Chatzigoga, 2017; Lazaridou-Chatzigoga, Katsos & Stockall, 2015). The above predictions have been tested in a growing body of experimental and developmental psychological works. Leslie and colleagues have focused on adult processing of generics, whereas Gelman and colleagues have sought to find empirical evidence from a developmental perspective. The evidence so far supports the hypothesis.

In the present paper, we will be concerned with this GaD hypothesis because for now, it is the theory that has made the clearest predictions, some of which, as discussed earlier, have already been tested. There are alternative views about generics and how they relate to universals. For instance, Lazaridou-Chatzigoga, Stockall & Katsos (2019) hold that generics might be universals with some domain restriction (say, to typical exemplars). Yet, such alternative hypotheses have not been developed until now in the way Leslie and colleagues' proposals.

To summarise so far, we could distinguish theoretical accounts into two broad categories, those that treat generics as quantificational and those that do not. Next, we will discuss experimental approaches to genericity, but we will focus exclusively on investigation concerning child language acquisition for our present concerns.

2.3 Child Language Acquisition Studies

2.3.1 Three critical dimensions of genericity

Although detailed discussion of children's knowledge or understanding of characteristic properties of generics is beyond the scope of the present paper, a brief discussion might be useful. The point at issue is that generics pose a challenging learning puzzle for young children, they seem to complicate the learning process (Gelman, 2010). There are three interesting questions that Lazaridou-Chatzigoga, Katsos & Stockall

(2017) posited in relation to three critical dimensions of generic meaning: (i) whether children know that a property introduced with a generic is likely to extend to new instances/exemplars of the kind (this constitutes an inductive learning puzzle, inductive leap: generics can license inferences about the shared properties of kinds), (ii) whether children know that generics permit exceptions (an additional factor that children should master to use them productively) and, (iii) whether children know that generics can be used or are still licensed even in the absence of strong statistical prevalence (low prevalence) in case the property is noteworthy or striking (unusual or remarkable).

Regarding the first question (or complication that children face),[17] Graham, Neyer & Gelman (2011) introduced 24- and 30-months-olds to a novel exemplar (e.g. a blue *blick*) in either generic ("*Blicks* drink milk") or non-generic form ("This *blick* drinks milk") while an action was modelled on the object (a drinking motion with a cup held up to the exemplar). Children were prompted to imitate the target action using the model object (e.g. the blue *blick*) or a new one (e.g. an orange *blick*). Results indicate that 30-month-old children use the generic/non-generic distinction to make inductive inferences about the properties of novel kinds. That is, children seem to reliably generalise properties to new exemplars/ instances of the same category.

As for the second question, the preponderance of evidence suggests that children are indeed knowledgeable about the exception-admitting property of generics (Gelman & Raman, 2003; Gelman & Bloom, 2007; Chambers et al., 2008). For instance, Chambers et al. (2008) found that 4-year-olds were sensitive to the generic/non-generic distinction when learning about novel creatures (e.g. "*Pagons*/These *pagons* are friendly"). More importantly, even when provided with an explicit counterexample (e.g., "Except this *pagon*. This *pagon* isn't friendly"), children still continued to generalise properties mentioned in generic utterances to subsequent exemplars.

Finally, we (adults) would accept "sharks attack people" as true even though a tiny percentage of sharks do so (exceptional sharks that do not attack humans are the vast

[17] As Gelman et al. (2008: 3) note, generics are potentially difficult for children due to the fact that they are abstract: "One cannot point to a kind, one can only point to *instances* of a kind", one can point at a particular dog (e.g. Fido), but we cannot point at the kind "dogs" (comprising an infinite number of instances: past, present and future dogs/ existing and non-existing instances). Children should make inductive inferences beyond what they can just observe (i.e. their child experience). Children should figure out not only how to refer to individual objects but also to more abstract kinds to which these objects belong.

majority of the kind) (Lazaridou-Chatzigoga, Katsos & Stockall, 2019; Prasada et al., 2013). No research to date, except for Lazaridou-Chatzigoga, Katsos & Stockall's (2019) most recent study, has investigated children's use of generics with striking properties or strikingness of the property as a factor in forming generalisations. Overall, the picture that emerges from the study is that both 4-and 5-year-olds and adults lower extension rates with striking properties.

2.3.2 Generics in child language acquisition studies: Children's Use and Understanding of Generics

Returning to the focus of the current section, regarding first language acquisition, recall from previous theoretical accounts that there is a fundamental question that emerges and that is how pre-schoolers come to acquire generics if there are no dedicated words to encode genericity cross-linguistically. On the one hand, the formal semantics approach postulates a covert null operator Gen and complex licensing conditions for generics, yet no explanation is provided on how children come to posit such operator. On the other hand, the Generic-as-Default (remember, GaD) approach holds that children do not undergo such a challenge because the unmarked and cognitively simpler generic is acquired by default, it does not need to be learned, it is freely available to younger children (Lazaridou-Chatzigoga, 2017). So, the GaD view predicts that generics should be easy for children to produce and understand. Thus, it would be natural to find generic utterances in early child speech. Related to production, Gelman, Goetz, Sarnecka and Flukes's (2008) study investigated the developmental emergence of generics by examining longitudinal transcripts from natural parent-child conversations taken from recordings on the CHILDES database (MacWhinney & Snow, 1990). The study included 8 monolingual, English-speaking children aged 2;0 to 3;7 at first recording, who were them followed to ages 3;1 to 4;11. First, they found that generics are frequent in children's natural everyday speech. All 2-year-olds in their sample produced generics, and by the age of 4 children produced generics as frequently as adults did. Secondly, they report that even at age 2, children actively initiated generic conversation (though at a lower rate than adults), showing that children do not simply imitate or are prompted by their parents' generic talk.

As Lazaridou-Chatzigoga (2015) points out, neither the Gelman et al.'s (2008) study presented above, nor other studies reporting data about generic in early child speech compare directly the rates of generic production with the rates of quantified or specific

utterances in the same children at the same ages. In the absence of such contrast, these investigations only provide "partial" support for the GaD view. There are a myriad of studies exploring when and how children master generics both in terms of production and comprehension, yet only two studies provide robust evidence in support for the Generics-as-default hypothesis (see Lazaridou-Chatzigoga, Katsos and Stockall (2015) for extensive discussion and a useful appendix available as supplementary material).

In Hollander et al.'s (2002) study, 3- and 4-year-old and adults were asked to answer questions like: "Do {girls/ all girls/ some girls} have curly hair?" Results indicated that both 3- and 4 years-olds were adult-like in their responses to generic questions, but only the 4-years-old were adult-like with questions including universal quantifiers "all" and indefinites "some". The 3-year-olds answered all three question types as if they were generic, they showed no sensitivity to the distinction between generic, "all" and "some", exactly as the GaD hypothesis would predict. More generally, it seems that performance shifts "abruptly" between 3 and 4 years of age and that generics are understood by 4 years of age.

Leslie and Gelman (2012) presented 3- and 4-year-old and adult participants with photos of animals and told them a novel fact about familiar animal kinds, where the facts were introduced in either generic or quantified form (either "all", "most", or "some"). The participants were tested for their recall of novel facts about animal kinds. They found that both adults and children accurately recalled generic facts as generic, but quantified facts were frequently recalled as generic, as predicted by the GaD view (recall that this hypothesis argues that generic generalisations are cognitively more basic than quantificational ones).

In contrast to these studies, almost all studies to date report that by around two years of age children perform well, and even adult-like, in their comprehension of both generic and quantified statements (Lazaridou-Chatzigoga, 2015). For instance, Gelman & Raman (2003) showed 2-, 3- and, 4-year-olds and adults pictures ("realistic drawings") of atypical or unusual category instances (e.g. penguins) and asked them questions about this atypical dimension (e.g. flying in the case of penguins), where the question was presented in either generic form (using the bare plural: "Do birds fly?"—in which case the answer should be "yes"—) or non-generic form (using the definite article *the* preceding the plural noun: "Do the birds fly?"—in which case the answer should be

"no"—). The results showed that both adults and children interpreted non-generic questions as referring to the items/ individuals shown in the picture/in the actual context (by answering "no") and generic questions as referring to the kinds in general (by answering "yes"). The authors conclude that even 2-year-olds attend to subtleties like morphosyntactic cues (e.g. *the* Xs versus Xs) to differentiate generic from specific reference. Thus, children began to understand the differences between generic and non-generic forms from a very young age. This is not the developmental pattern that the GaD proposal expects.

To recapitulate, taken together, Hollander et al. (2002) and Leslie & Gelman (2012) seem to be the only studies that offer clear, compelling evidence in favour of the GaD hypothesis, whereas Gelman and Raman (2003) for instance, contradicts it. Developmental studies thus provide "mixed" support for the GaD view according to Lazaridou-Chatzigoga et al. (2015). [18]

Still to be dealt with, however, is the main bulk of experiments regarding adult judgement data or adult processing studies which fall mainly under the GaD view and have studied genericity by contrasting it with overt quantification (universal "all", proportional "most" and existential "some"). Although detailed review of these studies lies beyond the scope of the present paper,[19] there seems to exist a generic bias when it comes to generalisation, which is strongly supported by data from recent experiments, to which we now turn.

The Generic Overgeneralization Effect (GoG)

As mentioned earlier, one of the empirical predictions that the GaD hypothesis makes is that quantified statements would be misunderstood or misrecalled as generics, given that generics constitute the default mode of generalisation and understanding quantified statements would require deviating from the default means of generalisation (Leslie et al., 2011). This prediction is instantiated in the Generic Overgeneralisation Effect ("GoG" henceforth). Leslie et al. (2011) define the GoG effect as "the tendency to overgeneralise the truth of a generic to the truth of the corresponding universal statement" (Leslie et al. 2011: 17), we tend to have a ("generic") bias towards interpreting universally

[18] Concerning second language acquisition and child bilingualism, resort to Pérez-Leroux, Munn, Schmitt, and DeIrish (2004), Kupisch (2006) and Serratrice, Sorace, Filiaci, & Baldo (2009) among others (as cited in Lazaridou-Chatzigoga (2017)).

[19] See Lazaridou-Chatzigoga (2017) for an exhaustive review of experimental studies regarding adult judgements.

quantified statements as generic: people do sometimes judge universal statements as true, despite knowing that they are truth-conditionally false.

The first detailed investigation of the GoG effect is found in Leslie et al. (2011), although similar results have been reported in other few studies (Khemlani, Leslie, Glucksberg, & Rubio-Fernández 2007; Khemlani, Leslie, & Glucksberg 2009 etc). In Leslie et al.'s (2011) first experiment, adult participants performed a truth value judgement task (TVJ) on sentences that appeared in one of the three forms: either generic, universal ("all"), or existential ("some"). The statements involved one of the following different types of properties: quasi-definitional "triangles have three sides" majority characteristic "tigers have stripes", minority characteristic "ducks lay eggs", majority non-characteristic "cars have radios", striking "pit bulls maul children", and false generalizations "Canadians are right-handed". They found that the GoG effect occurs on approximately half of the trials when the statement involves characteristic properties: 78% for majority characteristic and 51% for minority characteristic. No experimental evidence was found when the property is not characteristic of the kind, thus the GoG effect seems to be restricted to characteristic properties. The adult participants exhibited a tendency to judge universally quantified statements as true: the authors claim that participants made this "error" mainly because they relied on the corresponding generic, which is true.

Other alternative explanations for the GoG effect were entertained, but later discarded on the basis of subsequent experiments (experiment 2 of the study): (a) subkind interpretation, according to which people interpret *all ducks lay eggs* as 'all kinds of ducks lay eggs' applying to subkinds instead of individual members and thus judge it true (b) ignorance of the relevant facts, according to which people may actually think that all ducks (both male and female) lay eggs and (c) quantifier domain restriction (QDR), according to which people interpret "all ducks lay eggs" as a claim that applies only to the restricted set of mature fertile female ducks — it does not apply to the entire kind — . This latter possible alternative is based on the supposition that quantified statements are interpreted within a context, which restricts the scope of the quantifier (*as per* Stanley & Szabó, 2000). [20] Let me elaborate on their rejection of this third possible explanation a bit

[20] Recall from our earlier discussion that generics were immune to contextual restriction according to Krifka 1987; Krifka et al.1995, however not everyone agreed on this observation, some were reticent about this particular property, that is why it is still entertained.

further, which they addressed in experiment 2a. Leslie et al. (2011: 22) provided the participants with a context which supplied population information or estimates for the kind in questions in the following form:

(40) "Suppose the following is true: there are 431 million ducks in the world. Do you agree with the following: all ducks lay eggs?"

This (background) information was supposed to prime interpretation (or rather quantification) over each and every individual member of the kind in the world (in this particular case, over individual ducks) and not over different kinds or subkinds of those individuals, that is participants were directed to consider every single individual member of the kind, and thereby make it difficult (or almost impossible) to interpret *all* as restricted to the ducks that are presupposed to *lay eggs*, thus reducing the overgeneralisation effect. If acceptance of "all ducks lay eggs" was driven by contextual quantifier domain restriction in their first experiment, the authors expected that QDR would disappear or would not persist in a context with explicit population information.

Despite a minor reduction of the GOG effect, it still occurred on a substantial proportion of the trials, the authors reported a 55-60%[21] acceptance rate for *all* statements for majority characteristic statements and 30% for minority characteristic. Based on those results, the authors thus concluded that domain restriction could not be the only explanation for the GOG effect.

Lazaridou-Chatzigoga, Stockall & Katsos (2019) argued against Leslie et al.'s (2011) explanation (when judging universal statements, participants rely on the corresponding (true) generic statement, and thus fail to properly evaluate the universal in question) to the attested behaviour; [22] that is, the fact that adults ("erroneously") accept universally quantified statements as true (the behaviour labelled the GOG effect), and provided empirical evidence in favour of the pragmatic phenomenon of quantifier domain restriction which seems to be an alternative viable explanation. They empirically demonstrated (by running the same experiment in English and in Greek and manipulating the context preceding the critical utterance) that the observed tendency (to accept

[21] Leslie et al. (2011) do not report an exact percentage, but this is an approximate value that Lazaridou-Chatzigoga & Stockall (2013) derive from the graph that is presented on the paper.
[22] For space reasons the arguments will not be discussed here, but see Lazaridou-Chatzigoga, Stockall & Katsos (2017, 2019) for an elaboration on this issue. Leslie et al.'s experiments and interpretation of results are challenged, and conceptual arguments are provided against Leslie et al.'s rejection of the three alternative explanations alongside a fourth explanation: the atypical behaviour of "all".

quantified statements as true) can be largely explained through QDR, a "pragmatic" and pervasive phenomenon about which we have abundant independent corroborative evidence, which affects quantifiers and their interpretation within a context (von Fintel, 1994). Although it seems to be a major contributing factor in their experiments, QDR does not fully explain all of the "erroneous" acceptances of universal statements, so there is some residual behaviour that still requires investigation. Above all, the underlying idea here is that generics can be analysed as universals with QDR.

2.4 The linguistic expression of genericity

Even though most of the examples used so far involve bare plurals, GS are not expressed only with bare plurals. We can find different kinds of DPs in generic statements as they put no limits on the kind of DP that may appear on them (see Krifka et al., 1995: 19 where they note that: "characterizing sentences may contain virtually any NP, including indefinite and definite NPs of any type, and proper names"). Nevertheless, the important observation here is that cross-linguistically, there is no dedicated, unique or unambiguous marker for genericity, that is, genericity is not encoded in a unique way by the use of exclusively generic forms equivalent to a quantifier or determiner (Dahl, 1995). Whatever form is used for generic generalisations is also used in other non-generic contexts. Arguably, as a consequence, that may be the reason why within a language, generics appear in different constructions (Lazaridou-Chatzigoga, 2017).

Despite the fact that the form of expression differs across languages, that is, different languages use different grammatical devices to express genericity (Chierarchia, 1998), the most common types of DPs that are present in characterising sentences in English are mainly *bare plurals*, *indefinite singulars* and *definite singulars*, as exemplified below (Lazaridou-Chatzigoga, 2017):

(41) Cats have whiskers. *bare plural*

(42) A cat has whiskers. *indefinite singular*

(43) The cat has whiskers. *definite singular*

If we focus on natural languages that employ the presence/absence of a determiner in combination with tense/aspect features to express genericity, we observe that Spanish differs from English in the usage of a definite plural as the most frequent form for generics (in this respect, the Romance language Spanish is similar to Greek, see Lazaridou-

Chatzigoga, Stockall & Katsos, 2019). Nevertheless, Spanish employs different forms to express genericity as illustrated in (44) below, where (44a) constitutes a definite singular DP, (44b) contains a definite plural DP and finally (44c) comprises an indefinite singular DP (examples taken from RAE, 2010: 289). By contrast, bare singulars and bare plurals with a generic interpretation in preverbal position are generally disallowed (not only Spanish, but by extension other Romance languages also do not allow bare plural DPs in canonical argument position, specifically, in subject position), as exemplified in (44e) and (44d) below. It seems that preverbal bare plural subjects become more acceptable with adjectival modification, with coordination of two DPs or in a list, but in these cases, bare plurals would receive an existential, not a generic interpretation. Similarly, bare plurals are possible in object position or as postverbal subject, but they are restricted to existential readings (Ionin, Montrul & Santos, 2011).

(44) a. La gaviota se alimenta de peces.
the.SG seagull.SING REFL feed.IND.PRS.3SG on fish-PL
'The seagull feeds on fish.'

b. Las gaviotas se alimentan de peces.
the-PL seagull-PL REFL feed.IND.PRS.3PL on fish-PL
'Seagulls feed on fish.'

c. Una gaviota se alimenta de peces.
a seagull.SING REFL feed.IND.PRS.3SG on fish-PL
'A seagull feeds on fish.'

d. *Gaviota se alimenta de peces.
Seagull.SG REFL feed.IND.PRS.3SG on fish-PL
'Seagulls feed on fish.'

e. *Gaviotas se alimentan de peces.
Seagulls-PL REFL feed.IND. PRS.3PL on fish-PL
'Seagulls feed on fish.'

In languages that make a perfective/ imperfective distinction, generics are (typically) expressed by means of imperfective forms (Chierarchia, Partee & Turner, 1989). That is precisely the case in Spanish. Generic statements in Spanish tend to take imperfective verbal forms. However, exceptionally, some generics take perfective forms, as in (45) below. [23] In this case, one makes reference to a particular occurrence which affected an entire species of dinosaurs bounded in a specific time lapse (RAE, 2010: 289).

[23] As pointed out to me, another example could be the following:

(1) Los Dobermans tuvieron orejas puntiagudas (hasta que la ley lo prohibió).
the-PL doberman-PL have.IND.PST.PFV.3PL ear-PL point.ADJ-PL
'Dobermans had pointy ears (until the law prohibited it)'

(45) El dinosaurio se extinguió en el Cretácico.
The.SG dinosaur.SG REFL extinguish.IND.PST.PFV.3SG in the Cretaceous
'The dinosaur became extinct in the Cretaceous.'

Note that we can already observe that the unmarkedness claim for generics (as stated by Leslie, 2007) does not hold cross-linguistically (if we take it to be formal markedness in the sense of Haspelmath (2006)). Generics expressed as definite DPs — one of the most productive strategy in Spanish —are thus more "marked" than generics expressed as bare nouns — a productive strategy in English. It is important to note that definite DPs in Spanish are potentially ambiguous between a generic reference (kind-reference) and a definite (anaphoric) interpretation/ reading or specific reference (referring to specific discourse-identified entities). In contrast to English, as mentioned earlier, Spanish uses definite plurals most typically to express generic readings, however, definite plurals in Spanish can refer to either a specific group of individuals (the non-generic definite reading, as Ionin, Montrul & Santos (2011) state, equivalent to English definite plurals) or to a statement about the kind as a whole (the generic reading, equivalent to the interpretation of English bare plurals (Ionin, Montrul & Santos, 2011)).

There are very few studies which have taken on the challenge of looking at generics cross-linguistically (Behrens, 2005; Dayal, 2004). It becomes apparent that the acquisition of genericity needs to be studied in languages other than English (and a few more), to see whether similar patterns emerge, or patterns are similar across languages.

Up until now, we have considered the characteristic properties of generic statements as compared to universally quantified statements, we have reviewed the different approaches that have been adopted in the literature and we have looked at a few experimental studies that have tackled the issues of children's comprehension and production of generics (and to a lesser extent quantification). To date, studies on Spanish acquisition of generics are scarce. This so, in the present study, I seek to explore whether children acquiring Spanish comprehend generics and the differences between generic statements and universally quantified statements. By doing so, we emphasise the importance of doing experimental work on genericity and quantification cross-

Generic are most often expressed by imperfective forms, but perfective ones are possible as well, as illustrated in (1) above.

linguistically. Our study emerges in the context of recent proposals which claim that generic interpretations are simpler, more basic than quantified interpretations.

3. The Study

The present study aims to explore how typically developing children of different age ranges (4/5 and 8/9, respectively) comprehend, interpret and evaluate generic generalisations as compared to universally quantified statements. Our initial motivation to carry out this investigation stemmed from a bigger and more ambitious idea or project of exploring generic generalisations and quantification in a sample of adult population with Autistic Spectrum Conditions (henceforth ASC). Research on ASC has shown that individuals with ASC have serious difficulties with generalisation (Happé & Frith, 2006). We decided to address first these issues with a typically developing sample of children for the following reasons: (i) obviously, this may give us some clues about the acquisition of generics and quantifiers by children, and (ii) 9-year-olds seem to distinguish between generics and quantifiers (and had already mastered them) and not only can we compare their comprehension to that of 4/5-year-olds, but they may also serve as control group for adults with ASC. The reason why we may compare and contrast results from typically developing 9-year-olds with adults with ASC is because the sample of these latter individuals, with whom we would like to collaborate, present an intelligence quotient (IQ) (developmental age) similar to that of 9 year-old neurotypical children. Hence, this study, if possible, would be just the beginning of a larger and possibly fruitful project.[24]

3.1 Design

The investigation by Lazaridou-Chatzigoga, Stockall & Katsos (2019) served as a model. Building on an experimental design used by Lazaridou-Chatzigoga & Katsos (2013, which at the same time was based on the original study by Leslie et al., 2011), Lazaridou-Chatzigoga, Stockall & Katsos (2019) focused only on majority characteristic statements (i.e. "tigers have stripes" given they evoked a much stronger generic bias in the original study) and manipulated context to investigate the relevance of QDR for the documented tendency to "erroneously" accept universally quantified statements. They used three levels of context and thus varied the context preceding the critical utterance (Lazaridou-Chatzigoga, Stockall & Katsos, 2019: 12) : "(a) neutral, where the

[24] This is one of the reasons why we decided to leave the task simple, without any reading and too many stimuli.

information in the context does not interact with the truth value of the critical statement; (b) contradictory, where an exception which should rule out a universally quantified statement is made salient, and (c) supportive, where a paraphrase of the critical property is given, which makes its generality salient". Examples to illustrate each context level are provided below (Lazaridou-Chatzigoga, Stockall & Katsos, 2019: 12):

(49) a. **neutral**: Linton Zoo is home to three tigers, Tibor, Baginda and Kaytlin, whose playful games visitors love to watch and photograph.

b. **contradictory**: Linton Zoo is home to three tigers, Tibor, Baginda and Kaytlin, whose fur is all white due to a recessive gene that controls coat colour.

c. **supportive**: Linton Zoo is home to three tigers, Tibor, Baginda and Kaytlin, whose black and orange coats visitors love to photograph.

The contradictory and supportive contexts were supposed to make the relevant domain for QDR salient, while the neutral context simply served as a baseline measure. Both the contradictory and supportive contexts turned the implicit narrowing to 'all normal' cases into an explicit one by either emphasising some abnormal or atypical cases (contradictory condition) or by using a paraphrase that indicates that the relevant individuals had the property in question, i.e. they were "normal" individuals (supportive condition). Their procedure was as follows. Each trial consisted of three displays: (i) participants read a background context (in one of the three levels of context: neutral/ contradictory/ supportive); (ii) they read either a quantified or generic statement, and (iii) they were asked to judge whether they agreed with the statement they had just read (supposedly taking into account the background context. Put differently, given that information was supposed to prime quantification over the individuals that are presupposed by the relevant characteristic property).

Our experiment continues where Lazaridou-Chatzigoga, Stockall, & Katsos (2019) left off. We considered that although their original paradigm does an elegant job of making salient the exceptions, it seems that the retrieval of information from the first display — where participants are presented with the background context — to the last one — where participants had to actually judge — would be rather complex. Notice that participants were supposed to retain the background context information (once they had read it) until they were asked to judge.

We employed their experimental paradigm with a few major modifications. First, instead of using text in the background context as they did, we used pictures. Second, we solely focused on their contradictory context, which for us would be a non-supportive context in which participants are presented with an atypical, abnormal, weird instance (picture) of the kind (all non-supportive pictures were child-friendly) (e.g. a short-necked giraffe). Although, supportiveness was not treated as a variable in our design, we decided to add the supportive context with the fillers, so that participants did not establish a pattern when being presented the image. Third, in order to avoid their potential "retrieval problem", we tried to ensure that the non-supportive context was taken into account when providing judgements, so the non-supportive picture was maintained when either the quantified or generic statement was presented to the participant. Finally, our experiment was conducted in Spanish. Due to the specific characteristics of our sample, both critical items and fillers relied on (simplified) world knowledge (or knowledge very likely to be broadly shared) to ensure that 4/5-year-olds (and potentially/ presumably adults with ASC) were knowledgeable about. For the same reason, we, as Lazaridou-Chatzigoga, Stockall, & Katsos (2019) did, decided to focus on majority characteristic items for critical items, which constitute the more general case, leaving minority characteristic items for the fillers and striking properties out of this study, for future investigations.

In our design, we thus manipulated context to make non-supportive instances salient to the participants. This manipulation was expected to influence truth-value judgments. For us accuracy (Acc in short) in performance would mean acceptance in generic statements (by answering "yes") — given that generics allow for exceptions — and rejection in universally quantified statements (by answering "no") — universals do not allow such tolerance of exceptions and hence universals should be ruled out when an exception is made salient —.

3.2 Research Questions & Hypotheses

The present study aims to compare the comprehension of quantifiers and generics in typically developing children of different age groups: a 4/5-year-old group and a 8/9-year-old group, under the assumption that generics are easier to comprehend and are acquired earlier than quantifiers (GaD hypothesis, generics are cognitively more basic). Three major questions (RQ-s) guided this research (in parenthesis we mention an abbreviation of the idea we try to convey in each case):

RQ1: Are 4/5 to 8/9-year-old Spanish children sensitive to the characteristic differences between generics and quantified statements?

> H_0: Acceptance rates in generic statements will not differ from rejection rates in universally quantified statements.
> H_1: Acceptance rates in generic statements will be higher than rejection rates in universally quantified statements ($Acc_{Gen} > Acc_{Uni}$).

RQ2: Are there differences between 4/5-year-olds and 8/9-year-olds regarding the comprehension of both generics and universally quantified statements?

> H_0: Acceptance rates in generic statements and rejection rates in universally quantified statements taken together; that is performance in general will not differ in 8/9-year-olds and in 4/5-year-olds.
> H_1: Both acceptance rates in generic statements and rejection rates in universally quantified statements taken together; that is, performance in general will be higher in 8/9-year-olds than in 4/5-year-olds. 8/9-year-olds will have better ratings in their overall performance ($Acc_{young} < Acc_{old}$).

RQ3: Is there any interaction between the age of the children and the comprehension of generic vs universally quantified statement?

> H_0: There is no interaction between age and type of DP (generic vs universal).
> $H_{1:}$ There is an interaction between age and type of DP (generic vs universal).

We had the following four expectations: (i) we expected, following the GaD hypothesis, that 4/5-year-old children would be more accurate with generic statements than with universal statements ($Gen_{young} > Uni_{young}$); (ii) Besides, we expected that 8/9-year-olds perform much better when rejecting universally quantified statements than 4/5-year-olds, given that the latter would be in the process of acquiring them ($Uni_{old} > UNI_{young}$); (iii) Given the nature of the task, where exceptions were explicitly shown, we expected 8/9-year-olds to reject universals. Further, we predicted that they would perform at ceiling (or almost at ceiling) in universally quantified statements, that is, universals after a non-supportive context would yield very few acceptances overall. This should be so because we created the stimuli so that the non-supportive context would be salient and thus, rejection would be easy (also, we would not expect something as the "generic bias"); (iv) We also expected that the acceptance rates of generic statements

would be similar in both age groups. No —major— difference(s) should be observed in the acceptance rates of both age groups.

3.3 Method

3.3.1 Participants

A total of 55 Spanish-speaking children (30 male; 25 female) divided into two age groups, a 4/5-year-old group (*N* = 31, *M* = 68.16 months, *SD* =6.8) and an 8/9-year old group (*N* = 24, *M* = 108.75 months, *SD* = 6.3), were recruited from a local (primary) school in Vitoria-Gasteiz (Basque Autonomous Community, Spain). 4/5-year-olds belonged to different school years: 2nd and 3rd years of "Infantil" (child-care). We decided to collapse their results given that we did not have enough participants for each group (N=15 for each). On the other hand, in a preliminary study we did not see significant differences in their performance. All children were Spanish speakers and residents in Vitoria-Gasteiz, Spain. All volunteered to take part in the experiment. This study was carried out in accordance with the recommendations of the Human Beings Research Ethics Committee ("CEISH: Comité de Ética de Investigación con Seres Humanos de la UPV/EHU") with written informed consent from all subjects. Parents or caretakers gave written informed consent for their children to participate in the investigation prior to the inclusion in the study. Children also assented to participating in the experiment.

Participants were all randomly assigned to one of two lists that were created: List 1 (28 children) and List 2 (27 children).

3.3.2 Materials

8 utterances were produced for the universal quantifier *todos/as los/as* — all the — and another 8 utterances for the generic statement. Apart from the set of 16 critical items, there were 4 training items (at the very beginning of the experiment to ensure that participants followed the dynamics of the experiment) and 32 fillers. The 16 critical items consisted of majority characteristic statements like "cats have whiskers" and "horses have four legs". Special care was taken to select properties about which young children would be knowledgeable. Given the potential ambiguity between an anaphoric (definite) and a generic interpretation of a definite plural in Spanish, as discussed in section 2.4, the background non-supportive context was specifically chosen/ selected in order to bias

participants towards a generic interpretation.[25] Fillers came in two forms, either a minority characteristic generic statement (e.g. round bed, squared pizza) or a statement containing a proper name (e.g. Would you say that the Eiffel Tower is high?). For the generic statements (fillers), the background context was supportive (it matched with the statement in question), but the generic statement should be judged false, that is, we had chosen items that were false in generic form according to the extant theories, as they were about features/properties that only apply to a minority of the kind. Each participant saw 48 items in total, 16 test items and 32 fillers, which were presented in a randomised order. Two lists were generated in order to prevent participants from hearing the same sentence in the two conditions; that is, if one participant heard a given sentence with "all", then this participant did not hear the corresponding generic sentence. Thus, the material was counterbalanced across participants. Also, experimental items were randomised every time a participant started a new experimental session.

The two variables we manipulated for the majority characteristic items were:

a. Determiner type: definite plural generic (*los/las N*) / universally quantified statement (*todos/as los/las N*).
b. Age: Young (4/5-year-olds) vs Old (8/9-year-olds).

We also took into account background context type: non-supportive for critical items. Supportive for fillers. All the materials used can be found in the Appendix.

3.3.3 Procedure

Prior to the experiment, we conducted a pilot study to test the materials we had created. No further modification had to be made before the items were finalised for the final experiment. We first collected data from the "youngest" group of children and then with the "oldest" group (the procedure was kept the same). This was done in that particular order due to participants' availability during school classes. Children were tested individually in a quiet room in their school. So, we conducted the experiment with individuals separately and in succession. They had been previously told that they would play a game on the computer. Participants sat in front of a computer screen with the

[25] In the background non-supportive context, we showed participants a single exceptional instance/ individual. However, there was a filler item, I am referring to the short pants generic statement, in which participants doubted to whether they had to refer to pants in general or the specific pants that were shown in the picture.

investigator beside them at a child-sized table. The software used was E-prime stimulus presentation software on a PC running windows. At the beginning of the test, and for the sake of convenience, the investigator read the instructions that appeared on the screen. They were asked to listen carefully. While reading the instructions, I tried to make sure that participants would later pay attention to the non-supportive instances by mentioning that although some pictures/ photographs could seem weird, abnormal or unusual, they were real. There were four training items to show the participants what they had to do. During the training items, the researcher interacted with the participants to make sure the task was clear and properly understood. Feedback was given to make sure that they understood how they should reply to the question asked (by answering either "yes" or "no"). No feedback was given during the main task. Supportive feedback was given at the end, when the task was completed. The testing process took approximately 15 minutes to complete.

Participants were shown a non-supportive background picture (i.e. a short-necked giraffe or a cat without whiskers) in the middle of the screen accompanied by a pre-recorded audio of a female voice that said: "un gato sin bigotes" (a cat without whiskers). Participants listened to the audio recording through the integrated computer audition system. On the next screen, an image of a girl, a cartoon character, appeared on the right-hand-side of the screen and asked "¿Dirías que los gatos tienen bigotes?" ('Would you say that cats have whiskers?') or alternatively "¿Dirías que todos los gatos tienen bigotes?" ('Would you say that all cats have whiskers?') (The pre-recorded audio with the question was played twice in case any participant needed it to be repeated more than once. There was no going back. In the meantime, participants could see the non-supportive picture in the left-corner of the screen. Participants were asked to judge whether they agreed (or not) with the statement they have just heard. It was a forced-choice task, thus participants were instructed to choose "yes" or "no" in light of the picture that had been presented to them. Responses were recorded by button press. The investigator was the one pressing the "yes" or "no" button on the mouse. The keyboard was locked for convenience. The image of the girl and the picture remained on the screen until participants decided. Fillers were included to ensure that the subjects were paying attention and providing sensible answers.

In (50) we can see a sample of a trial of a generic statement after the non-supportive context (the reader should follow the sample trial with Figure 1 and 2 in order to get the feeling of the experiment):

(50) Screen 1:

Background: Picture of a cat without whiskers with an audio recording that says: "un gato sin bigotes" (a cat without whiskers).

Screen 2:

A picture of a girl, a cartoon character, emerges on the right hand-side of the screen together with the non-supportive picture. An audio recording simulating that the girl is speaking says: ¿Dirías que los gatos tienen bigotes? (Would you say that cats have whiskers?) (x2, doubly repeated).

○Yes (left-button on the mouse) ○No (right-button on the mouse)

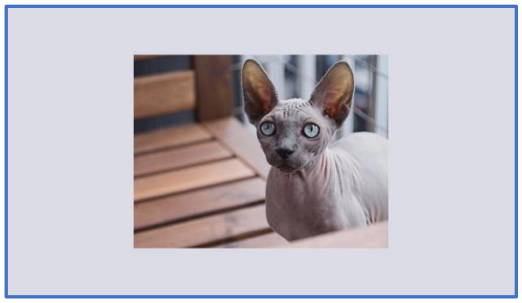

Figure 1: Background non-supportive picture.

Figure 2: The cartoon asks a generic or universal statement.

There was a pause after half of the experimental session was completed, so that children could take a rest of 3-5 minutes. Participants completed the entire experiment in a single session which lasted around 15-18 minutes. After the experimental session, some of the children asked the researcher for more questions because they liked them.

3.3.4 Codification of responses and data analysis

The responses given by each participant were recorded on the computer from a document that E-prime automatically generates. One document was generated for each participant. These documents were transformed into Excel files and were later collapsed into a single Excel file, so that the data from all participants could be easily manipulated from it. As for the codification, the responses codified as accurate (recall that accuracy means acceptance for generic statements and rejection for quantified statements) were assigned 1 point and non-accurate ones 0 points. To analyse the data, we used both descriptive and analytical statistical tools from SPSS and Excel. T-tests and ANOVAs

were used. Our analyses were between group comparisons and within group comparisons across participants and per items to see whether differences emerged.

3.4 Results

Table 1 summarises the mean number of accurate responses to the TVJ question in each condition (generic vs universal, and young vs old), and figure 3 plots these results graphically.

	DETERMINER TYPE	
AGE	Generic	Universal
Young	92	30
Old	72	64

Table 1: % of accurate responses per condition to TVJ

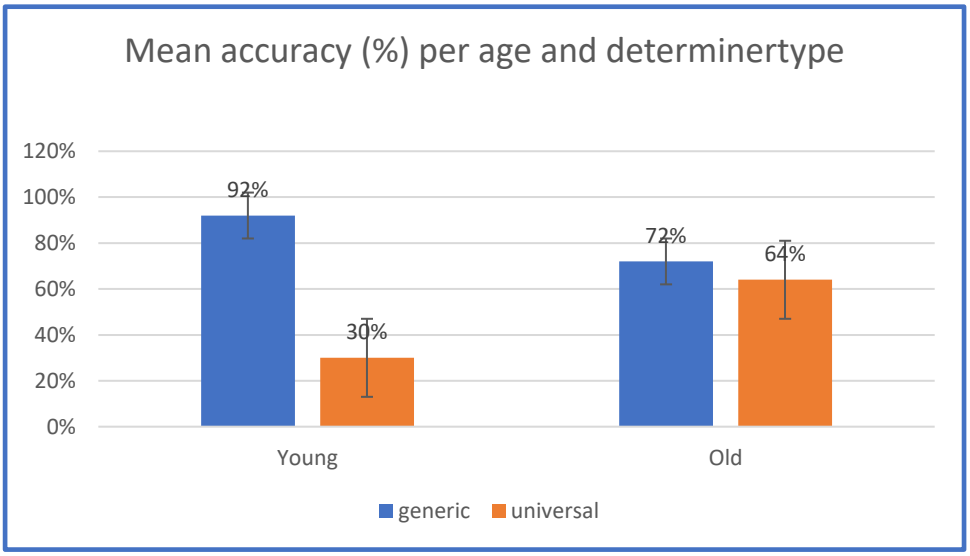

Figure 3: % of accurate responses per age class and type of statement. Error bars plot standard error.

We first calculated the percentage of accurate responses per determiner type (generic vs universal) and age (young vs old), as observed in table 1. In figure 4 it can be observed that young children(4/5-year-olds) performed extremely well on generics, correctly accepting generic statements in a 92% of the cases, while universally quantified statements were correctly rejected in a 30% of the cases. Older children (8/9-year-olds) accept generics in 72% of the cases and reject universally quantified statements in 64% of the cases. Thus, older children's performance contrasts with young children's performance in that older children performed better than young children in universals (there is a sharp developmental change), they correctly rejected universally quantified statements when shown a non-supportive picture, but decrease in generics (decrease of

about 20%), they did not accept (so frequently) generic statements when shown a non-supportive picture.

Overall, generics were accepted at higher rates (83.4 %) than universals were denied (45%) across the board. But the performance, in general (when we collapsed determiner type and examined the percent of accurate responses), did not differ too much from old to young (68.2% compared to 61.1% respectively).

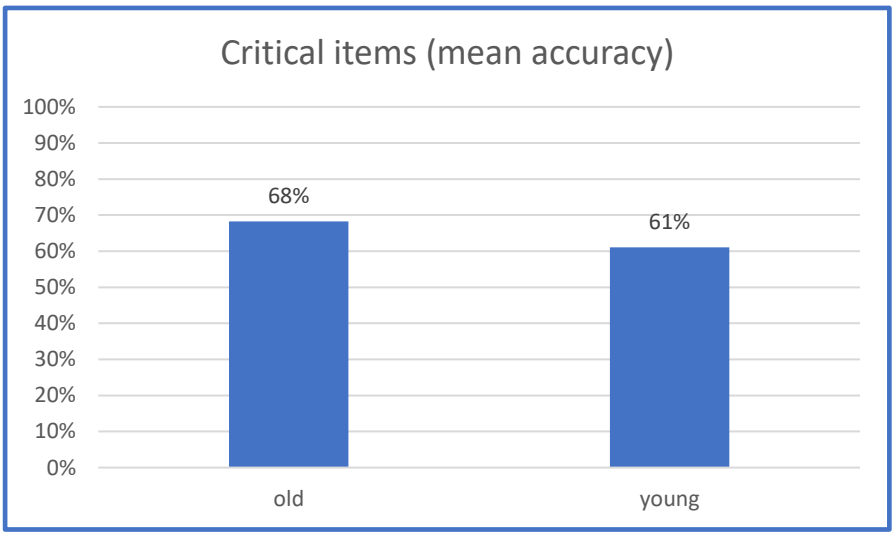

Figure 4: Mean of overall accurate responses regarding critical items comparing age groups.

An aspect that deserves closer attention is acceptance/rejection rates per item. Without getting into much detail, we did find that universal statements that 4/5-year-olds correctly accepted/rejected correspond to those that 8/9-year-olds correctly rejected/accepted.

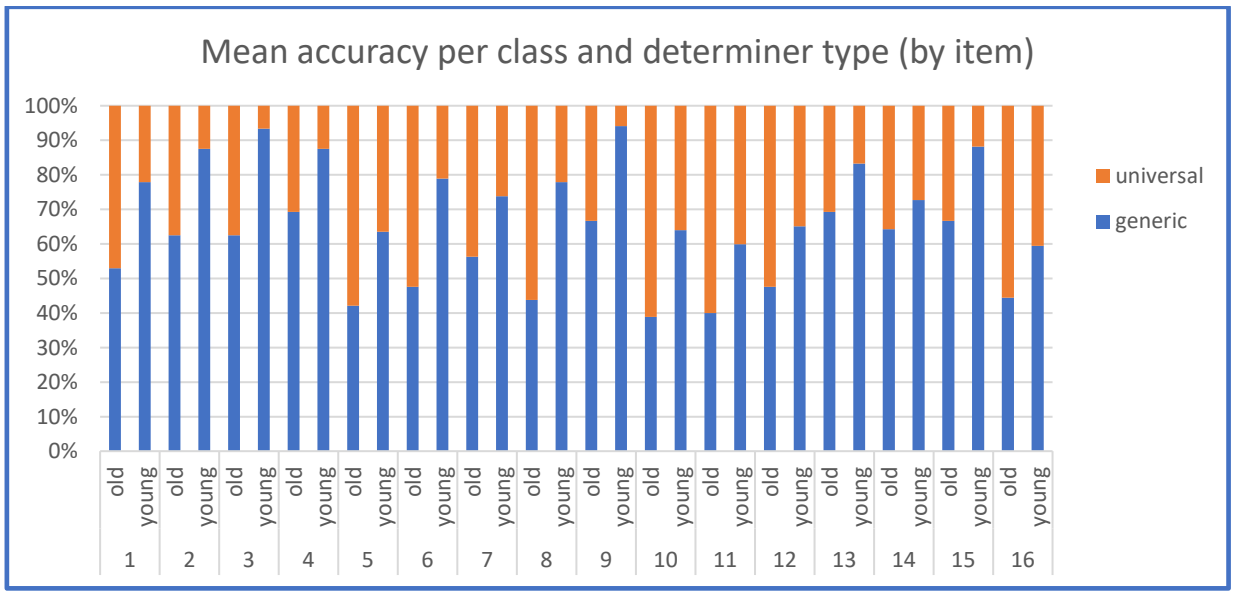

Figure 5: Mean of accurate responses item by item comparing old vs young. Numbers indicate each critical item as follows (I only indicate the relevant individual and the characteristic property in the interest of

brevity): 1 cat.whiskers; 2 dog.tail; 3 horse.legs; 4 bee.wings; 5 deer.antlers; 6 man.teeth; 7 elephant.tusks; 8 man.arm; 9 rabbit.ears; 10 pig.colour(pink); 11 person.hair; 12 sheep.colour(white); 13 giraffe.neck; 14 chicken.wings; 15 frog.eyes; and 16 cow.spots. For a detailed account of each critical item, see Appendix.

Regarding filler items (without going too much into detail), both young and old children performed much better with proper names than with generic statements (young: 81%; old:92% compared to young: 49%; old: 44%, respectively) (as observed in figure 6). However, these results taken jointly suggest that the performance was rather low (young: 65% of accuracy; old: 68% of accuracy), and further, no evolution can be observed from younger to older children (as illustrated in figure 7).

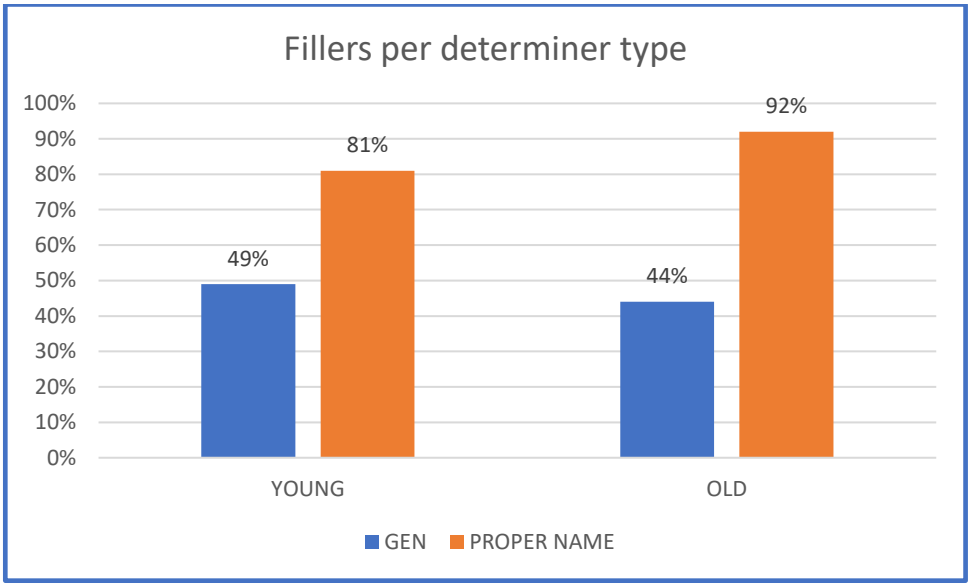

Figure 6: % of accurate responses regarding fillers comparing age groups.

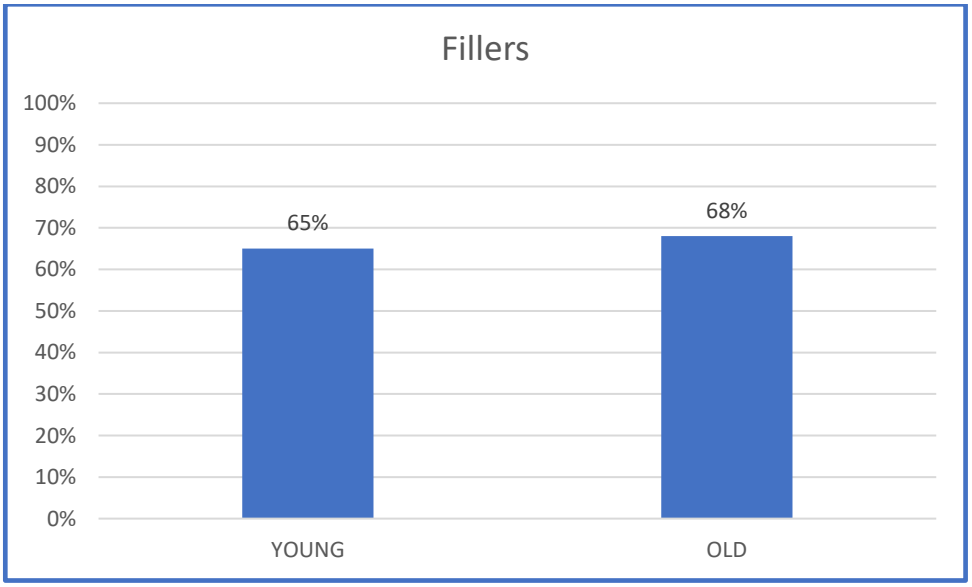

Figure 7: % of overall accurate responses regarding fillers comparing age groups.

3.4.1 Statistical analyses on the results

Analyses across participants

We next were interested in finding out whether there were statistically significant differences and/ or interactions between conditions (generic vs universal, and young vs old). First, we conducted a series of paired t-tests on these results. We analysed the results of each age group separately, because comparing groups directly to one another would not have been possible given the difference in the number of participants. Nevertheless, a more telling comparison is within the group. For each group, we conducted an independent t-test on determiner type. Comparing the determiner type condition within the older group, the t-test revealed that there were no statistical differences regarding accurate responses. The t-test revealed that the difference between generics and universals regarding accurate responses was not statistically significant (t (23) =0.763, $p < 0.453$, 95% CI [-14.258, 30.924]). For the younger group, we obtained a statistically significant difference between generic and universal accurate responses (t (30) =13.523, $p < 0.000$, 95% CI [52,376, 71.010]), indicating a significantly better performance with generics than with quantifiers. The data thus revealed an asymmetry between generic and universal quantifiers for young children.

Then, for each determiner type (generic vs universal), we conducted a one-way ANOVA to see whether there was some significant difference between both age groups. The dependent variable was the determiner type, either generic or universal. Each analysis yielded a significant difference between the two age groups (young vs old). For the generic condition, $F(1, 53)=11.014$, $p < 0.002$, $\eta 2 =.172$. For the universal condition, $F(1, 53) = 25.212$, $p < 0.000$, $\eta 2 =.322$.

In order to find any statistical differences between age groups, young vs old, we conducted a one-way ANOVA. The analysis revealed that there was a (slight) statistical difference between age groups ($F (1, 53) = 4.944$, $p < 0.03$, $\eta 2 = .085$).

Analyses per item

Finally, we conducted a repeated-measure ANOVA on the control categories, crossing determiner type (generic vs universal), and class (age range: young (4/5-year-olds) and old (8/9-year-olds)). The analysis revealed no significant effect for class, that is, between age groups, young vs old ($F(1, 60)=3.007$, $p < 0.088$, $\eta 2= 0.017$), but there was statistical difference between determiner type ($F(1, 60)=71.131$, $p < 0.000$,

η2=0.405). Thus, we concluded that there was a main effect of determiner type. Further, the analysis yielded a significant interaction between determiner type and age ($F(1, 60) = 41.396$, $p < 0.000$, $\eta 2 = .235$).

4. Discussion

We set out to explore, compare and contrast the comprehension of generic statements and universally quantified statements in typically developing children of two different age groups: 4/5 and 8/9-year-olds. The research questions of the study were the following ones (repeated here for ease of reference):

RQ1: Are 4/5 to 8/9-year-old Spanish children sensitive to the characteristic differences between generics and quantified statements?

RQ2: Are there differences between 4/5-year-olds and 8/9-year-olds regarding the comprehension of both generics and universally quantified statements?

RQ3: Is there any interaction between the age of the children and the comprehension of generic vs universally quantified statement?

With respect to RQ1, based on the previous literature, in particular on GaD that argues that generics instantiate cognitively primitive generalisations, we hypothesized that $Acc_{gen} > Acc_{uni}$. The results of this study confirm this hypothesis. We also expected that 4/5-year-olds would perform much better with generic statements, that is they would accept generic statements when confronted with a non-supportive picture, than reject universally quantified statements in the same paradigm (Acc_{young} gen > Acc_{young} uni). This prediction has been satisfied. Thus, we can tentatively conclude from the results obtained in this experiment that the acquisition of generics is prior to that of universal quantification. However, these results should be interpreted cautiously, mainly because the results obtained from the fillers generate doubts as to whether 4/5-year-olds really comprehend generic statements given that they accept statements with minority characteristic properties which in principle adult-like behaviour would reject (or at least, that is what the dominant views on generics would predict).

On the other hand, it is noteworthy that these participants had such low performance in universals, given that there is evidence that typically developing children display knowledge of quantifiers by their second birthday (Katsos et al. 2016), but most importantly, that 4-year-old children have apparently no difficulties with universal

quantifiers at least when the domain quantified over is restricted (Barberán, p. c.). In a task in which participants are presented with five objects and five boxes (between zero and five objects were inside the boxes for each given test item), and participants heard a description that contained a quantifier and had to evaluate whether the description was right or wrong for the visual display (e.g. "Are all the circles in the boxes?"), their responses were overall accurate. So, there may be a difference between restricted quantification and unrestricted quantification. In our task, when we ask about "all cats", we mean the totality of cats. Hence, the domain which the universal quantifies over is not restricted to a certain set or situation. The conclusion we can draw here is that whereas young children master restricted quantification, they have problems with unrestricted quantification.

This may suggest that generics may be QDR universals, since, as we have just said, 4-year-olds are better at restricted universal quantification than at unrestricted universal quantification, and, as our data show, 4/5-year-olds are better at generics than at unrestricted universal quantification. However, we cannot draw any conclusion in favour of this way of understanding generics (as opposed to the GaD view). Our data are compatible with any of these views. Actually, we were not seeking for evidence that could tell in favour of one or the other.

Regarding RQ2, the results obtained in this study showed that there are no (statistical) differences between 4/5-year-olds and 8/9-year-olds regarding the comprehension of both generics and universally quantified statements. Regarding general performance, we expected differences to emerge with respect to 4/5-year-olds performance/ accuracy and 8/9-years-old performance/ accuracy. Perhaps a further study with a bigger population should be conducted and maybe with a different methodology.

With regard to RQ3, interaction between the age of the children and the comprehension of generic vs universally quantified statement has been fully attested in this study.

Besides, we also expected that 8/9-year-olds performed much better when rejecting universal statements (unrestricted) than 4/5-year-olds, which has been the case as the results obtained indicate. However, for universals, the results were not at ceiling, as expected. Our materials manipulated context/ background in the sense of making some exception salient. We observed that older participants still accepted universal quantified

statements that had exceptions. Looking more closely at the results, specifically at accuracy rates item per item, we have observed that both age groups' performance regarding universals was worse when the exceptions were unfamiliar to them (e.g. a three-legged horse as compared to one arm man). Accordingly, both group's performance was more accurate when exceptions were familiar to them (or at least, they showed certain familiarity, e.g. a bald person). A plausible, but speculative, explanation about why children would react differently to familiar vs unfamiliar exceptions when verifying universal statements, is that they do not revise their prior beliefs/ knowledge easily. That is, they do not update their beliefs in the light of new information.

One unexpected result in this study was that both age groups did not show similar acceptance rates for generic statements (similar accuracy). As the statistical analysis showed, there was a major difference between the older and younger group in accuracy for generics, such that young children display greater accuracy, i.e. better performance. We would not expect such statistically significant difference. It is not apparent what lies behind or drives such difference. Based on the GaD, which argues that generics come as the default mechanism, we would expect or rather assume stability along the developmental trajectory. Future research on adults can help clarify this point.

Another interesting fact about the results obtained in the present study is the error rates for both generic and universals that we observed in 8/9-year-olds. As expected, we found no statistical difference between the performance in generics and universals for the older group, but we expected their overall accuracy or general performance to be higher. Participants failed considerably to properly evaluate generic and universal statements.

A fact that bears further discussion is the low performance in both age groups regarding fillers, specifically with false generic statements (that is minority characteristic statements), as in "Las pizzas son cuadradas" ('Pizzas are square-shaped'). They seemed to accept them at an overwhelming rate. It is important to note that some children after accepting the false generic statement (by answering "yes") added: "algunos/as sí" ('Some, are'). Alternatively, few children said (for instance with the square-shaped pizza): no, not all. In this respect, it might be or these results may potentially reflect that children are treating those generic statements as involving existential quantification ("some") and in the former case "correctly" judging them true. In general, what these results show is that false generics were difficult to evaluate or assess for both age groups.

5. Conclusion

The current study contributes to the growing body of literature on genericity and quantification and further highlights the importance of experimental work on these issues cross-linguistically. Specifically, we addressed the interpretation of generics and quantifiers in Spanish-speaking children. In this paper, we presented results of a Truth Value Judgement Task and addressed the basic question of how children of different age groups comprehend (and evaluate) generics and further compared them to children's comprehension of universally quantified statements. The question of how children ever come to master generics is not a trivial one, and it is not easy to answer either. The challenge that generics pose for children acquiring a system comes fundamentally from two reasons/ observations; first, there is no overt cue to foster the generic interpretation, there is no language that has a unique, specific marker to express genericity and second, generics tolerate exceptions, yet not all exceptions (recall the example of paperback books). This distinctive property seems to vary radically from generic to generic. Hence, generics are not a simple matter.

Generic statements have been approached or tackled in different fields; mainly in linguistics (specifically in formal semantics), but also in experimental psychology. Linguists have more than anything else tried to specify the truth- and licensing conditions of generics, but they have encountered numerous difficulties, generics have proved specially challenging. Recent research in psychology, in particular studies by Leslie and colleagues have suggested that generics are the default mode of generalisation, they are simpler and more basic than universally quantified statements and they constitute the innately given disposition. Basically, they come for free. Not few are the studies that have tested this hypothesis, and to date they seem to support it. This proposal is quite appealing given that generics would not involve quantification and children would not need to acquire them with great effort.

Thus, the basic goal of our research was to compare Spanish children's comprehension of generics vs universally quantified statements in two distinct age groups; 4/5-year-olds and 8/9-year-olds, to test whether differences emerge. Our study compared definite plural generics to "all" universally quantified statements and systematically manipulated the context, so that we made salient the exception, in order to

correctly accept the generic statement and thus tolerate for exceptions and rule out the universally quantified statement.

The results obtained in the present study revealed that 4/5-year-olds are sensitive to the properties of generics in that they accept generic statements in spite of a non-supportive context, but fail to reject universally quantifies statements in the same paradigm, which tentatively confirms that generics are acquired earlier than quantification. However, as we have observed, these results should be interpreted cautiously. Intriguingly, we did find that there were no statistical differences in the overall performance between Spanish 4/5-year-olds and 8/9-year-olds. In addition, the older group performed better when rejecting universally quantified statements, but performance was not (almost) at ceiling, as expected. In addition , another interesting and surprising finding was that we expected similar accuracy rates (acceptance rates) for generic statements for both age groups, yet we unexpectedly found statistical difference, such that 4/5-year-olds accept generic statements to higher rates — exactly the opposite of what we might have predicted. As Lazaridou-Chatzigoga & Stockall (2013: 341) observe: "In the end, our results muddy the waters more than they clear them", but I argue it is in this blurred situation where new (potentially interesting) questions emerge.

Further research to systematically and consistently investigate genericity and quantification (possibly cross-linguistically) and to better understand how we understand (and acquire) generic statements in clearly needed. The following logical step would be to test adults and compare the results with the ones obtained in the present study. Further, as discussed in section 3, we would like to explore these issues on an IQ-matched population with ASC. Given that we have opened the possibility to the fact that children may display difficulties updating their beliefs, we might test this option with people with ASC, who seem to experience problems in tasks that involve information updating (see Pijnaker et al. 2009). Investigating further these issues will hopefully lead us to a fruitful line of research.

The present study serves as a demonstration of how interdisciplinary work proves vital and generics deserve much attention. Further research is clearly motivated.

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Appendix

This appendix provides the materials (practice items, critical items and fillers) used in the experiment. For the critical items, each participant saw only one form of each critical majority characteristic statement (either generic or universal) and a non-supportive context (exceptional picture) for each given statement. All critical statements are given here in both forms: the generic and universal form. Most of the statements are a subset of the items used in Lazaridou-Chatzigoga, Stockall & Katsos (2019). As for the fillers, generic forms and proper names were used. Each participant saw a supportive context for each generic filler.

Practice-items

1. **Background:** a picture of a brown donkey.

¿Dirías que esto es un burro marrón?

[English translation: Would you say that this is a brown donkey?]

2. **Background:** a picture of lorry.

¿Dirías que esto es un camión de bomberos?

[English translation: Would you say that this is a fire engine?]

3. **Background:** a picture of a white duck.

¿Dirías que esto es un pato blanco?

[English translation: Would you say that this is a white duck?]

4. **Background:** a picture of a metal spoon.

¿Dirías que esto es una cuchara de madera?

[English translation: Would you say that this is a wooden spoon?]

Critical items

1. **Background:** a picture of a cat without whiskers.

¿Dirías que los gatos tienen bigotes? Or ¿Dirías que todos los gatos tienen bigotes?

[English translation: Would you say that cats have whiskers? Or Would you say that all cats have whiskers?]

2. **Background:** a picture of a dog without tail.

¿Dirías que los perros tienen cola? Or ¿Dirías que todos los perros tienen cola?

[English translation: Would you say that dogs have tails? Or Would you say that all dogs have tails?]

3. **Background:** a picture of a three-legged horse.

¿Dirías que los caballos tienen cuatro patas? Or ¿Dirías que todos los caballos tienen cuatro patas?

[English translation: Would you say that horses have four legs? Or Would you say that all horses have four legs?]

4. **Background:** a picture of a bee without wings.

¿Dirías que las abejas tienen alas? Or ¿Dirías que todas las abejas tienen alas?

[English translation: Would you say that bees have wings? Or Would you say that all bees have wings?]

5. **Background:** a picture of a deer without antlers.

¿Dirías que los ciervos tienen cuernos? Or ¿Dirías que todos los ciervos tienen cuernos?

[English translation: Would you say that deer have antlers? Or Would you say that all deer have antlers?]

6. **Background:** a picture of a toothless man.

¿Dirías que las personas tienen dientes? Or ¿Dirías que todas las personas tienen dientes?

[English translation: Would you say that people have teeth? Or Would you have that all people have teeth?]

7. **Background:** a picture of a tuskless elephant.

¿Dirías que los elefantes tienen colmillos? Or ¿Dirías que todos los elefantes tienen colmillos?

[English translation: Would you say that elephants have tusks? Or Would you say that all elephants have tusks?]

8. **Background:** a picture of a disabled man (with a single arm).

¿Dirías que las personas tienen dos brazos? Or ¿Dirías que todas las personas tienen dos brazos?

[English translation: Would you say that people have two arms? Or Would you say that all people have two arms?]

9. **Background:** a picture of one-ear-rabbit.

¿Dirías que los conejos tienen dos orejas? Or ¿Dirías que todos los conejos tienen dos orejas?

[English translation: Would you say that rabbits have two ears? Or Would you say that all rabbits have two ears?]

10. **Background:** a picture of a black pig.

¿Dirías que los cerdos son rosa? Or ¿Dirías que todos los cerdos son rosa?

[English translation: Would you say that pigs are pink? Or Would you say that all pigs are pink?]

11. **Background:** a picture of a bald person.

¿Dirías que las personas tienen pelo? Or ¿Dirías que todas las personas tienen pelo?

[English translation: Would you say that people have hair? Or Would you say that all people have hair?]

12. **Background:** a picture of a black sheep.

¿Dirías que las ovejas son blancas? Or ¿Dirías que todas las ovejas son blancas?

[English translation: Would you say that sheep are white? Would you say that all sheep are white?]

13. **Background:** a picture of a short-necked giraffe.

¿Dirías que las jirafas tienen el cuello largo? Or ¿Dirías que todas las jirafas tienen el cuello largo?

[English translation: Would you say that giraffes have long neck? Or Would you say that all giraffes have long neck?]

14. **Background:** a picture of a chicken with four wings.

¿Dirías que las gallinas tienen dos alas? Or ¿Dirías que todas las gallinas tienen dos alas?

[English translation: Would you say that chickens have two wings? Or Would you say that all chickens have two wings?]

15. **Background:** a picture of a three-eyed-frog.

¿Dirías que las ranas tienen dos ojos? Or ¿Dirías que todas las ranas tienen dos ojos?

[English translation: Would you say that frog have two eyes? Or Would you say that all frogs have two eyes?]

16. **Background:** a picture of a white cow.

¿Dirías que las vacas tienen manchas? Or ¿Dirías que todas las vacas tienen machas?

[English translation: Would you say that cows have spots? Or Would you say that all cows have spots]

Fillers (generics)

1. **Background:** a picture of a white gorilla.

¿Dirías que los gorilas son blancos?

[English translation: Would you say that gorillas are white?]

2. **Background:** a picture of a yellow bird.

¿Dirías que los pájaros son amarillos?

[English translation: Would you say that birds are yellow?]

3. **Background:** a picture of a boy wearing glasses.

¿Dirías que los niños tienen gafas?

[English translation: Would you say that children (boys) wear glasses?]

4. **Background:** a picture of a girl with curly hair.

¿Dirías que las niñas tienen el pelo rizado?

[English translation: Would you say that girls have curly hair?]

5. **Background:** a picture of a blue butterfly.

¿Dirías que las mariposas son azules?

[English translation: Would you say that butterflies are blue?]

6. **Background:** a picture of a red leaf.

¿Dirías que las hojas son rojas?

[English translation: Would you say that leaves are red?]

7. **Background:** a picture of a green table.

¿Dirías que las mesas son verdes?

[English translation: Would you say that tables are green?]

8. **Background:** a picture of a pair of short pants.

¿Dirías que los pantalones son cortos?

[English translation: Would you say that pants are short?]

9. **Background:** a picture of a purple lettuce.

¿Dirías que las lechugas son moradas?

[English translation: Would you say that lettuces are purple?]

10. **Background:** a picture of a house with black roof.

¿Dirías que las casas tienen tejados negros?

[English translation: Would you say that houses have black roofs?]

11. **Background:** a picture of an Italian restaurant.

¿Dirías que los restaurantes son italianos?

[English translation: Would you say that restaurants are Italian?]

12. **Background:** a picture of a square-shaped pizza.

¿Dirías que las pizzas son cuadradas?

[English translation: Would you say that pizzas are square-shaped?]

13. **Background:** a picture of a Spanish omelette "pintxo".

¿Dirías que los pintxos son de tortilla?

[English translation: Would you say that "pintxos" are of Spanish omelette?]

14. **Background:** a picture of a car with two doors.

¿Dirías que los coches tienen dos puertas?

[English translation: Would you say that cars have two doors?]

15. **Background:** a picture of a round bed.

¿Dirías que las camas son redondas?

[English translation: Would you say that beds are round?]

16. **Background:** a picture of a plastic chair.

¿Dirías que las sillas son de plástico?

[English translation: Would you say that chairs are made of plastic?]

Fillers (proper names)

1. **Background:** a picture of the Eiffel Tower.

¿Dirías que la Torre Eiffel es alta?

[English translation: Would you say that the Eiffel Tower is high?]

2. **Background:** a picture of the Virgen Blanca Square (in Vitoria).

¿Dirías que la plaza de la virgen blanca está en vitoria?

[English translation: Would you say that Virgen Blanca Square is in Vitoria?]

3. **Background:** a picture of Celedón, a character from local festivities in Vitoria.

¿Dirías que Celedón tiene boina?

[English translation: Would you say that Celedon has a beret?]

4. **Background:** a picture of Peter Pan with friends (from the film adaptation).

¿Dirías que Peter Pan tiene amigos?

[English translation: Would you say that Peter Pan has friends?]

5. **Background:** a picture of Ibaiondo, a wellness-centre in Vitoria (with swimming-pools).

¿Dirías que Ibaiondo tiene piscina?

[English translation: Would you say that Ibaiondo has a swimming pool?]

6. **Background:** a picture of PortAventura,a theme park in Spain.

¿Dirías que PortAventura es un parque de atracciones?

[English translation:Would you day that PortAventura is a theme park?]

7. **Background:** a picture of Donald Duck.

¿Dirías que el Pato Donald tiene pico?

[English translation: Would you say that Donald Duck has a beak?]

8. **Background:** a picture of a Shakira, a famous singer.

¿Dirías que Shakira es cantante?

[English translation: Would you say that Shakira is a singer?]

9. **Background:** a picture of Alavés, a local football team from Vitoria.

¿Dirías que el alavés es un equipo de baloncesto?

[English translation: Would you say that Alavés is a basketball team?]

10. **Background:** a picture of Oscar, a Spanish man.

¿Dirías que óscar es chino?

[English translation: Would you say that Oscar is Chinese?]

11. **Background:** a picture of a Chritmas , with trees covered in snow.

¿Dirías que las navidades son en primavera?

[English translation: Would you say that Christmas is in spring?]

12. **Background:** a picture of Olentzero, a coal merchant that brings presents at Christmas (similar to Santa Claus).

¿Dirías que el Olentzero lleva corbata?

[English translation:Would you say that Olentzero wears a tie?]

13. **Background:** a picture of Donald Trump.

¿Dirías que trump es moreno?

[English translation: Would you say that Trump is dark-haired?]

14. **Background:** a picture of Mickey Mouse.

¿Dirías que Mickey mouse es una ratoncita?

[English translation: Would you say that Mickey Mouse is a (female) mouse?]

15. **Background:** a picture of Captain James Hook, an evil character from the film Peter Pan.

¿Dirías que el capitán garfio es bueno?

[English translation: Would you say that Captain James Hook is good?]

16. **Background:** a picture of the Three Wise Men.

¿Dirías que los reyes magos son dos?

[English translation: Would you say that the Three Wise Men are two?]