The Acquisition of French *Un*

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Abstract

How does cross-linguistic variation in grammatical structure affect children's acquisition of number words? In this study, we addressed this question by investigating the case study of young speakers of French, a language in which the number *one* and the indefinite article *a* are phonologically the same (i.e., *un*). We tested how French-speaking children interpret *un,* and whether it more closely resembles the English word *a* or *one.* We found that French-speaking children almost always accepted sets of 1 for *un,* but that their responses for sets of 2 were more equivocal, with many children saying "Oui" (Yes) when asked whether there was *un.* Overall, French children's interpretation of *un* differed from how English-speaking interpret both *a* and *one*. This suggests that French-speaking children's interpretation of *un* reflects the ambiguity of the input that they are exposed to. We conclude that French morphological structure may pose a challenge to French-speaking children in acquiring an exact numerical meaning for the word *un,* potentially causing a delay in number word learning.

Keywords: Number; language; cognitive development

Introduction

How does the grammatical structure of a language affect children's acquisition of number words? By some accounts, morphology plays a central role in the acquisition of number words as it provides a conceptual framework for understanding small number words prior to conceptualizing them in terms of positive integers (Carey, 2004; Sarnecka, Kamenskaya, Yamana, Ogura, & Yudovina, 2007). The acquisition of these number words is progressive and follows a specific order (Le Corre & Carey, 2007; Sarnecka & Carey, 2008; Wynn, 1990). First, children learn the meaning of *one*, such that when they are asked to provide one object, they are able to correctly give one object and avoid giving one for other number requests. At this stage, these children are called "one-knowers". Then, children learn an exact meaning for *two*, and can give one or two when asked for one and two objects, but provide an incorrect response for other numbers. At this stage, children are called "two-knowers". Following the same pattern, children become "three-knowers" and sometimes "four-knowers". Finally, sometime after learning these number words, children seem to realize that they can use the count list to generate and give sets of any cardinality and for this reason, they are referred to as "Cardinal-Principle-knowers" (CP-knowers).

According to Carey (2009) and Sarnecka et al. (2007), morphology occupies a central role in the numerical acquisition process as children initially interpret *one*, *two* and *three* as markers of grammatical number categories. On this hypothesis, when children hear the word *one* in their input, it frequently occurs with singular agreement (e.g., *one cat*), whereas larger number words typically occur with plural nouns (e.g., *two cats*). Such cues might speed learning, allowing children to "bootstrap" number word meanings from grammatical morphology, such that, initially "one" is assigned a meaning similar to "a", and "two" is interpreted like a plural (Barner & Bachrach, 2010; Bloom & Wynn, 1997; Clark & Nikitina, 2009). Compatible with this, children learning languages like English, which has a grammatical singular/plural distinction, learn the meaning of *one* earlier than children exposed to languages that lack obligatory singular/plural marking, such as Japanese and Mandarin (Barner, Libenson, Cheung, & Takasaki, 2009; Le Corre, Li, Huang, Jia, & Carey, 2016; Sarnecka et al., 2007). Additionally, 2- to 4-year-old children learning Slovenian and Saudi Arabic, languages that have singular/dual/plural systems, acquire the meanings of *one* and *two* earlier than children exposed to any other previously tested language, despite being less familiar with counting overall (Almoammer et al., 2013; Marusic et al., 2016).

While previous tests of the relation between morphology and number word learning have focused mainly on how differences in grammatical morphology across languages might impact number words, few studies have asked whether the grammatical form of the numbers themselves might impact learning. Although children might initially interpret "a" and "one" similarly in English to learn a preliminary meaning of "one", they differentiate these words by at least 2 years of age: when children are shown a plate with two strawberries and are asked, "Is there *a* strawberry on the plate?" and, "Is there *one* strawberry on the plate?", 2-year-olds answer "Yes" for *a* strawberry but "No" for *one* strawberry, and do so as soon as they become one-knowers (Barner, Chow, & Yang, 2009). This suggests that *a* receives a purely existential interpretation (compatible with sets of 2 objects), while *one* receives an exact interpretation (compatible with sets of only 1 object). This suggests that, to acquire an exact meaning of "one", English children's input for "a" and "one" must differ.

Interestingly, however, other languages, like French and German feature the same phonological representation for both "a" and "one", a fact which might make it more difficult for them to determine whether to assign an existential or exact meaning to any particular instance of the word. For

example, in French, the word *un* is used both as an indefinite article and as a numeral. Consequently, French learners are presented with a potentially difficult learning problem, since the same phonological form is associated with both exact and non-exact meanings in their input.

Here, we investigated how French-speaking children interpret *un* – whether it resembles more closely the English *a* or *one* – and whether their interpretation of *un* differs based on the context of the task and whether surrounding test items are numerals or are restricted to non-exact quantifiers like "some" and "all". To further understand the impact of the ambiguity of the French morphological structure on children's interpretation of *un*, we compared the French-speaking children's interpretation of *un* to those of English-speaking children for *a* and *one* (obtained from Barner, Chow, & Yang, 2009).

Method

Participants

In total, 63 French monolingual children, aged 2;4 to 4;5-year-old were included in the study (M = 42.6 months). An additional 13 were excluded from analysis because of failure to complete all 3 tasks (n=2), bilingual status (n=7) or because they were not yet one-knowers or greater (non-knower; n=4). Participants were recruited from preschools in Québec (Canada). Informed consent was obtained from the parents. The study received approval by the ethics committee of UCSD.

Materials and procedure

Participants were tested at their preschool in a quiet corner of their classroom. Each session lasted approximately 15 min and included (1) a Truth-Value Judgement task, (2) the Give-a-Number task and (3) the Highest Count task. All participants were administered the tasks in this order. Children received a small prize for their participation at the end of the session.

Truth-Value Judgement Task (TVJ). This task was adapted from Barner, Chow, and Yang (2009) and its goal was to measure children's comprehension of the quantity terms: *un, des, deux, tous* (i.e., one/a, some, two, all) by asking them questions like, "Est-ce qu'il y a un canard dans la maison?" (Is there a/one duck in the house). Stimuli consisted of a drawing of a farmhouse and a forest, as well as three sets of small plastic animals (i.e., cats, pigs, and ducks). These animals were chosen as they are denoted by masculine nouns in French and therefore accompanied by the masculine form of the quantifier *un* (in contrast to the feminine *une*), which is the same form that typically corresponds to the number one (*un*). Animals were presented in separate piles organized by kind (Figure 1). Children were presented with the following instructions: "*Ça c'est la maison des animaux et ça, c'est la forêt. Moi je vais mettre des animaux dans la maison puis je vais te poser des questions. Toi, tu dois me répondre par oui ou non, ok?*" (i.e., "This is the animals' house and this is the forest. I will put animals in the house and ask you some questions. You need to answer by yes or no, ok?"). For each trial, the experimenter moved a certain number of animals into the farmhouse and asked the child a yes/no question. The animals were returned to their original piles after each trial. Children were randomly assigned to one of two conditions that differed with respect to the filler items that they included: (1) the Number condition, (2) the Quantifier condition. Children in the Number condition were presented with *un* and, as filler items, the number word *deux* (two), as well as the quantifier *tous* (all). Children in the Quantifier condition were also presented with *un*, in addition to the quantifiers *des* (some) and *tous* (all). Each item was presented with two different sets of animals. In both conditions, *un* was presented with sets of 1 and 2 objects. Children in the Number condition were asked questions with *deux* in the presence of 2 and 3 objects, to check whether they would interpret the number as exactly two and not compatible with larger sets (even by one object). Children in the Quantifier condition were questioned about *des* with sets of 1 and 2 objects, to check whether they would have a plural interpretation of *des*. In both conditions, *tous* was presented with sets of 3 and all 4 objects, to ensure that children had an interpretation of *tous* that was compatible with only all objects being present. Each combination of item and set was presented three times, for a total of 18 critical trials. The order of critical trials was counterbalanced across subjects.

Figure 1: Material used in the TVJ task.

Give-a-Number Task (Give-N). This task was adapted from Wynn (1990) and its goal was to evaluate children's understanding of number words. Stimuli consisted of a puppet, a red plastic plate, and 10 foam paper cookies. Children were asked to put a certain number of cookies into the plate (e.g., "*Peux-tu mettre trois biscuits dans l'assiette?*" i.e., "Could you put three cookies into the plate?"). After this first prompt, children were asked to count to verify that they had provided N, and if they had chosen to fix their answers, only their final responses were recorded. Each child was given 15 trials: three trials for each of the numbers 1, 2, 3, 4, 6. Order of trials was counterbalanced across children. Children were credited as N-knowers (e.g., two-knowers) if they correctly gave N cookies two out of three times when asked for N, and failed to give the correct N two out of three

times for N+1. In addition, to be classified as an N-knower, children could not use N more than 50% of the time for requests other than N. Finally, children were credited as CP knowers if they could correctly give six, two out of three times.

Highest Count Task (HC). Participants were asked to count as high as they could. The last number reached before making an error was taken as the highest count.

Results

Our primary question of interest was how French-speaking children interpret *un* and whether their interpretation differs according to the presence of other exact expressions in the context. In our first set of analyses, we tested whether performance in both conditions (Number and Quantifier) differed in terms of knower-levels (Give-N), Age, and Highest Count. Then, we conducted a series of analyses on *tous*, *des,* and *deux* to ensure that children either performed similarly across conditions (i.e., tous) or as expected given their respective conditions (i.e., des/deux). In our third set of analyses, we addressed our principal question of interest: Whether acceptance of sets of 1 or 2 objects for *un* differed across conditions. Finally, in a fourth set of analyses, we assessed how the acceptance rates for *un* compare to those for *a/one* in English by statistically comparing previously published data from English-speaking children (obtained from Barner, Chow, & Yang, 2009).

Preliminary Analyses

Knower-Levels. Table 1 shows the distribution of knower-levels across Conditions (Number vs Quantifier). Aside from a slightly greater number of one-knowers in the Quantifier condition, the conditions were similar in terms of their representation of each knower-level. Knower-level was not included as a factor in subsequent analyses comparing conditions both because our hypothesis is neutral to differences in knower level, and because such analyses require very substantial sample sizes to obtain adequate power.

Table 1: Distribution of Knower-Levels in the Number and Quantifier condition

	1K	2K	3K	4K	CP
Number	8	6	6	3	5
Quantifier	13	6	8	4	4
Total	21	12	13	7	9

Table 1: Here, 1K refers to one-knower, 2K to two-knower, 3K to three-knower, 4K to four-knower and CP to cardinal-principle-knower.

Highest Count. On average, children had difficulty counting to "dix/ten" (M = 6.30; SD = 4.80). The average Highest Count did not differ between the Number condition (M = 6.50; SD = 4.39) and the Quantifier condition (M = 6.14; SD = 5.18; p = 0.77).

Age. There was no difference in age between children in the Number condition (M = 42.71 months; SD = 6.86) and the Quantifier condition (M = 42.43; SD = 6.84; p = 0.87).

Truth-Value Judgment Task

Preliminary analysis of Tous, Des, Deux. In total, there were 35 children in the Quantifier condition and 28 in the Number condition. Figures 2 and 3 show the percentage of ''oui/yes" responses for each quantity term in each condition. As a first control check, we considered whether conditions differed in their acceptance of *tous* when controlling for Age and Highest Count. To do this, we performed a logistic mixed-effects model comparison,[1] using lme4 and car packages in R (Bates, Maechler, Bolker, & Walker, 2015; Fox & Weisberg, 2011).

In our first model, we predicted acceptance (coded as *yes* or *no*) from Age and Highest Count (HC), with participant as a random factor. In our second model, we added the main effects and interaction of Condition (Number vs. Quantifier) and Set Size (3 or all 4 objects) to the first model. In this model, we expected only a main effect of Set size and no difference between Conditions or interaction between Conditions and Set Size. The models were significantly different ($\chi^2(3) = 315.33$, $p = <.0001$). As expected, in our second model, the only significant predictor was Set Size ($\chi^2(1) = 30.75$, $p = <.0001$). This suggests that, in both conditions (Number and Quantifier), children were more likely to accept sets containing all 4 objects (Number: M = 0.99, SD = 0.11; Quantifier: M = 1.00, SD =0.00) compared to sets of 3 objects (Number: M = 0.25, SD = 0.44; Quantifier: M = 0.18, SD = 0.39).

As our second control check, we asked whether children in the Number condition accepted sets of 2 more often than sets of 3 objects when presented with *deux* (two), controlling for Age and Highest Count. In a model predicting acceptance from Age, Highest Count, and Set Size (with participant as a random factor), only Set Size was a significant predictor ($\chi^2(1) = 21.26$, $p = <.0001$). As expected, children accepted sets of 2 (M = 0.92, SD = 0.28) more often than sets of 3 (M = 0.28, SD = 0.45). Finally, as our last control check, we asked whether children in the Quantifier condition accepted sets of 2 more often than sets of 1 object when presented with *des*, after controlling for Age and Highest Count. Similar to the analysis with *deux*, in a model predicting acceptance from Age, Highest Count and Set Size (with participant as a random factor), only Set Size was a significant predictor ($\chi^2(1) = 15.89$, $p = <.0001$). In this context, children answered

[1] For *tous*, the first model specification was: Acceptance ~ HC + Age + (1|subject). The second was: Acceptance ~ HC + Age + Set Size * Conditions + (1|subject). For *des* and *deux*, the first model specification was: Acceptance ~ HC + Age + (1|subject). The second model was: Acceptance ~ HC + Age + Set Size + (1|subject).

"yes" more often when presented with sets of 2 (M = 0.93, SD = 0.26) compared to sets of 1 object (M = 0.69, SD = 0.47), though acceptance was high overall across these cases (compatible with past findings in English; Barner et al., 2009, and formal semantic analyses of the plural; see Bale, Gagnon, & Khanjian, 2011; Krifka, 1989; Sauerland, Anderssen, & Yatsushiro, 2005; Spector, 2007). Overall, the preliminary analyses combined confirmed that both conditions 1) did not differ in terms of Age and HC, 2) elicited interpretations of *tous*, *des* (Quantifier) and *deux* (Number) that the task was designed to induce.

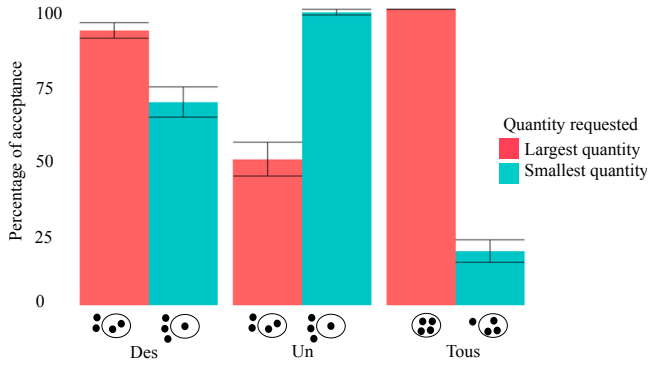

Figure 2: Children's percent saying "Oui/Yes" responses for each quantity term in the Quantifier condition in the Truth-Value Judgment Task. For the quantifier *des*, the largest quantity that was presented is 3 objects while the smallest is 2 objects. For *un*, the largest quantity that was presented is 2 objects while the smallest is 1 object. For *tous*, the largest quantity corresponds to all 4 objects while the smallest quantity consists of 3 objects. Error bars indicate standard error of the mean.

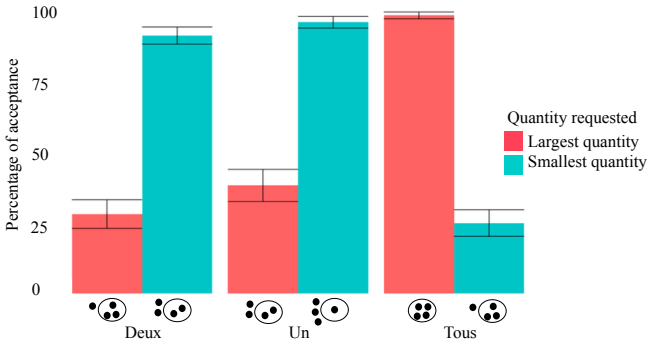

Figure 3: Children's percent saying "Oui/Yes" responses for each quantity term in the Number condition in the Truth-Value Judgment Task. For the numeral *deux*, the largest quantity that was presented was 3 objects while the smallest was 2 objects. For *un*, the largest quantity presented was 2 objects and the smallest 1. For *tous*, the largest quantity corresponded to all 4 objects while the smallest quantity was 3 objects. Error bars indicate standard error of the mean.

Children's interpretation of *Un*. In our main set of analyses, we addressed the question of how French-speaking children interpret *un* and whether their interpretation was exact (compatible with only sets of 1 object), inexact (compatible with sets of both 1 and 2 objects) or ambiguous. To do this, similar to the preliminary analysis, we performed a logistic mixed-effects model comparison.[2] In Model 1, we predicted acceptance from Age and Highest Count, with participant as a random factor, and in Model 2, we added the main effects and interaction of Set Size (1 or 2 objects) and Condition (Number vs. Quantifier) to Model 1. The presence of a main effect of Set Size would indicate of an interpretation of *un* that is either exact or ambiguous. Furthermore, adding Condition to our second model allowed us to test the question of whether acceptance rates differed based on the context of the game. If children have access to two different meanings for *un* that can be triggered by the pragmatic context of the game, then we should expect a significant interaction between Condition and Set Size, and specifically, that the acceptance rate for 2 objects should be higher in the Quantifier condition compared to the Number condition. Models 1 and 2 were significantly different ($\chi^2(3) = 164.79$, $p = <.0001$). However, in Model 2, the only significant predictor was Set Size ($\chi^2(1) = 50.24$, $p = <.0001$). As can be seen in Figures 2 & 3, children in both conditions accepted sets of 1 object (Number: $M = 0.96$, $SD = 0.19$; Quantifier: $M = 0.99$, $SD = 0.10$) more often than sets of 2 (Number: $M = 0.38$, $SD = 0.49$; Quantifier: $M = 0.49$, $SD = 0.50$). These results suggest that French-speaking children almost always accept sets of 1 for *un*, but when presented with sets of 2 objects, their interpretation of *un* is uncertain, hovering around 50% chance of saying "Oui/Yes", regardless of the context in which *un* is embedded.

Thus far, our data are more compatible with the third alternative presented: that French-speaking children have an ambiguous interpretation of *un* that is compatible with sets of 2 objects. In addition, despite the lack of significant difference between conditions, the question of whether French-speaking children have access to one or two meanings for *un* remains open. Indeed, our data are compatible with different interpretations: first, it is possible that French-speaking children only have access to a fuzzy representation of *un* - i.e., one that is neither exact like the English *one*, but not fully inexact like *a*. Second, it is possible that French-speaking children have access to two meanings for *un* but that the context of the task couldn't trigger the different interpretations. In order to further shed light on these possibilities, we compare these French-speaking children's acceptance rates to those of an English-speakers sample.

[2] The first model specification was: Acceptance ~ HC + Age + (1|subject). The second was: Acceptance ~ HC + Age + Set Size * Conditions + (1|subject).

Comparison with English data

To assess how these results compare to English, we obtained previously published data from English-speaking children's performance on the same task (from Barner, Chow, & Yang, 2009) and compared them to our sample of French-speaking children. The English sample included 31 participants of the same age (M = 45.3 months) as the French-speaking children in our study. The original task in Barner et al. (2009) included trials with *a, some, most, all, none, one, two*, with different options of set sizes, but only trials that tested *a* (sets of 1 and 2), *some* (sets of 1 and 2), *two* (sets of 2 and 3), *one* (sets of 1 and 2) and *all* (sets of 3 and all 8 objects) were selected for the current analyses.

First, we compared the acceptance rates for *some/des*, *two/deux,* and *all/tous* across French and English using mixed-effects model comparisons.[3] This was used as a control check to ensure that the linguistic groups didn't differ in the way that they understood and responded to the task. In all model comparisons, we first predicted acceptance from Set Size (with participant as a random factor) and then, added Language (English vs French) and the interaction between the two terms in the second model. There was no difference across languages for *some/des* and *two/deux* (both $ps > 0.01$). There was, however, a significant difference across languages and Set Size for *all/tous* ($\chi^2(1) = 7.13$, $p = <.001$) revealing that French children were more likely to accept sets containing all objects (M = 0.99; SD = 0.07) when asked about all objects compared to English speakers (M = 0.91; SD = 0.30)[4].

Our primary question of interest was whether French- and English-speaking children differed in their acceptance rate of *a, one,* and *un*. This question is also closely related to the question of whether French-speaking children have one or two meanings for *un*. Our prediction was that if French-speaking children had access to two interpretations for *un*, the context could be manipulated to favor one interpretation over the other, and we expected specifically that children in the Number condition would be more likely to have an interpretation of *un* close to *one* but not *a*, while children in the Quantifier condition would have an interpretation of *un* close to *a* but not *one*. To foreshadow, we found that children in the Number condition had an interpretation of *un* that was similar to *one* but not *a* and that children in the Quantifier condition interpreted *un* somewhat closer to *one* but differently than *a*. We obtained these results by performing 4 model comparisons contrasting the acceptance rate of: (1) the Number condition's interpretation of *un* to English speakers' interpretation of *one*, (2) the Number condition's interpretation of *un* to English speakers' interpretation of *a*, (3) the Quantifier condition's interpretation of *un* to English speakers' interpretation of *one*, (4) the Quantifier condition's interpretation of *un* to English speakers' interpretation of *a.* In all our first models, we predicted acceptance from Set Size (with participant as a random factor) and then, added Language (English vs French) and the interaction between the two terms in the second model.[5] When comparing (1) the Number condition's interpretation of *un* to English speakers' interpretation of *one,* we found only a main effect of Set Size ($\chi^2(1) = 2.15$, $p = <.001$) suggesting that all children were more likely to say "Yes" when presented with sets of 1 object (M = 0.96; SD = 0.19) compared to sets of 2 objects (M = 0.31; SD = 0.47), regardless of their linguistic group. Next, we looked at whether (2) children in the Number condition interpreted *un* differently than English speakers' interpretation of *a*. Here, our analysis revealed a main effect of Set Size ($\chi^2(1) = 20.95$, $p = <.001$) and an interaction between Set Size and Language ($\chi^2(1) = 7.42$, $p = <.01$) suggesting that English speakers where more likely to accept sets of 2 when asked for *a* (M = 0.78; SD = 0.42) compared to French speakers asked for *un* (M = 0.38; SD = 0.49). We then turned to children in the Quantifier condition and looked at how their interpretation of *un* compared to English. We first checked whether (1) the Quantifier condition's interpretation of *un* differed from English *one.* Here, we found a main effect of Language ($\chi^2(1) = 8.01$, $p = <.01$) and of Set Size ($\chi^2(1) = 30.22$, $p = <.001$), but the interaction between the two terms was not significant. This suggests that all children were more likely to accept sets of 1 object (M = 0.98; SD = 0.12) compared to sets of 2 objects (M = 0.39; SD = 0.49) and that French-speaking children (M = 0.77; SD = 0.42), on average, were more likely to say "Yes" compared to English-speaking children (M = 0.51; SD = 0.50). Finally, we looked at (4) how interpretation of *un* in the Quantifier condition compared to English speakers' interpretation of *a*. Here, we found a significant effect of Set Size ($\chi^2(1) = 17.47$, $p = <.001$), but most importantly a significant interaction between Set Size and Language ($\chi^2(1) = 6.77$, $p = <.01$), driven by the fact that French-speaking children were less likely to accept sets of 2 objects for *un* (M = 0.49; SD = 0.50) compared to English-speaking children for *a* (M = 0.78; SD = 0.42). Overall, these results suggest that children in the Quantifier condition interpreted *un* differently from English-speaking children's *a* and that children in the Number condition had an interpretation of *un* that was similar to *one* but not *a*.

[3] In all model comparisons, the first model specification was: Acceptance ~ Set Size + (1|subject). The second was: Acceptance ~ Set Size * Language + (1|subject).

[4] The difference between French- and English-speaking children could be explained by the fact that the English speakers, unlike the French speakers, when asked for *tous*, were presented with sets of no object at all in addition to the sets of 3 and all objects. English speakers could have accepted the sets of 3 objects more often simply due to the fact that it was already closer to "all objects" compared to the sets with no object at all. Regardless, the acceptance for sets of 3 in was still lower than 50% and for this reason, was not considered in our next analyses.

[5] In all model comparisons, the first model specification was: Acceptance ~ Set Size + (1|subject). The second was: Acceptance ~ SetSize * Language + (1|subject).

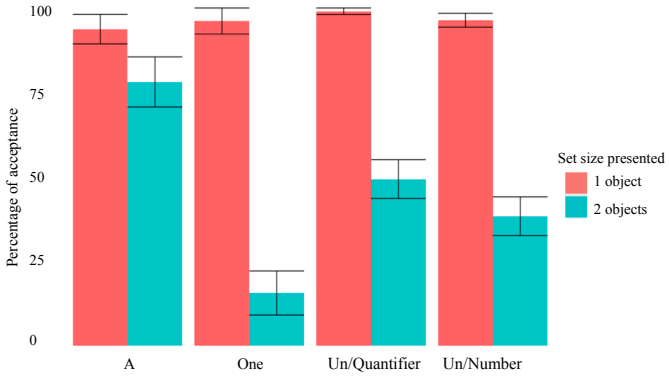

Figure 4: Comparison of English- and French-speaking children's acceptance rates for *a*, *one*, *un* in the Truth-Value Judgment Task (data from Barner, Chow, & Yang, 2009). "Un/Quantifier" represent the performances of children in the Quantifier condition while Un/Number represent the performances of children in the Number condition. Each term was presented with sets of one and two objects. Error bars indicate standard error of the mean.

Discussion

The goal of this study was to investigate the role of the morphological structure on children's acquisition of number words, via the case study of French-speaking children. Specifically, we investigated (1) how French-speaking children interpret *un,* and whether it is interpreted exactly, non-exactly or ambiguously, and (2) whether they have access to different meanings for *un* that can be triggered by the context of a task: an exact meaning that closely resembles English *one* and an inexact meaning similar to English *a*. When comparing acceptance rates across conditions, we found that children almost always accepted sets of 1 for *un,* but that their responses for sets of 2 were more varied, with many children saying "Oui/yes" when asked whether there was *un*, regardless of whether they were in the Number or Quantifier condition. However, an interesting mixed pattern emerged when comparing these acceptance rates to those of English-speaking children of the same age: children in the Number condition interpreted *un* as English-speaking children interpreted *one* (i.e., an exact interpretation compatible with only sets of 1 object), but children in the Quantifier condition interpreted *un* in a way that was not close to English-speaking children's *a*.

Overall, our results suggest that the morphological structure of French has an impact on children's learning. Specifically, our findings support the view that the homophony of *un*, compatible with both an exact and inexact interpretation, matters for the acquisition of the number word *one* as it creates a communicative problem. This homophony of *un* may provide more variable input to French-speaking children, leading to an ambiguous interpretation of the word. The contrast between English- and French-speaking children's interpretations of *un* vs *one/a* also suggests that French-speaking children not only need to learn that *un* can bear different meanings (exact and inexact) but also that meanings are affected by the context.

It has to be noted that the homophony of *un* is not the only aspect of French's morphology that could have an impact on children's acquisition of *un* as a numeral. Indeed, French's plural morphology is less salient in verbal communication compared to other languages like English. For example, in spoken French, very few nouns and verbs mark the singular/plural distinction, with the result that most nouns lack an audible word-final *s* to mark the plural like in English. This lack of salient plural agreement might exacerbate the challenge faced by French-speaking children to acquire an exact interpretation for *un*, but also other number words. Indeed, in English, children could in theory quickly start to notice a distinction between *one* and *two* as *one* always receives the singular agreement while *two* receives the plural. However, in French that distinction is unavailable for children (e.g., chat – i.,e., cat – is pronounced the same way regardless of whether it is presented with *un* or *deux*). As a consequence, French-speaking children might need to rely on more complex syntactic structures to pick up the distinction between *un* and *deux* (e.g., un chat dort/sleeps *vs* deux chats dor*ment*/sleep) and may need a significantly larger amount of input compared to English speakers – as not all verbs change phonetic forms based on plural agreement.

Another interesting aspect of these results is the apparent discrepancy between French children's performance for *un* in the Give-N task and the TVJ task. As a reminder, we excluded children who were not at least classified as One-knower at the Give-N task. This implies that when asked to provide *un biscuit* (i.e., *one* cookie), all children were able to provide exactly 1 object at least 2 out of 3 times. However, from the TVJ task, we can see that these same children still accepted sets of 2 objects as compatible with *un* around 50% of the time. Nonetheless, these results are not necessarily in contradiction. Indeed, these results are compatible with previous accounts which posit that though words like *a* and *one* may be associated with cardinal values of 1, they may not be pragmatically "strengthened" to exclude larger sets, especially in young children (Barner & Bachrach, 2010; Sauerland et al., 2005; Spector, 2007). According to these theories, if a child knows the meaning for *one* and knows that other numerals don't refer to set of 1 object, it would be infelicitous to provide more than 1 object when asked for *one*. For example, if a person asks to provide a fork, it would be pragmatically odd to give 2 or 3 forks. However, it would be more natural to have an existential interpretation of *one/a* in the context of a question – e.g., it seems less odd to say "yes, there is a fork in the bag" when asked whether there is *a/one* fork in bag and there is in fact 2 forks.

Taken together, our results raise the possibility that the ambiguity of French morphological structure poses a challenge to French-speaking children in acquiring an exact numerical meaning for the word un, potentially causing a delay in number word learning. Studies are currently in progress to test the possibility of a delay in the acquisition of early number words in French-speaking children.

Acknowledgments

We would like to thank members of the Language and Development Lab for their support during this project and the reviewers for their helpful comments and feedback.

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