French children’s use and correction of weird word orders: A constructivist account*

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ABSTRACT

Using the weird word order methodology (Akhtar, 1999), we investigated children’s understanding of SVO word order in French, a language with less consistent argument ordering patterns than English. One hundred and twelve French children (ages 2;10 and 3;9) heard either high or low frequency verbs modelled in either SOV or VSO order (both ungrammatical). Results showed that: (1) children were more likely to adopt a weird word order if they heard lower frequency verbs, suggesting gradual learning; (2) children in the high frequency conditions tended to correct the ungrammatical model they heard to the closest grammatical alternative, suggesting different models activated different grammatical schemas; and (3) children were less likely to express the object of a transitive verb than were English children in an equivalent study, suggesting object expression is more difficult to master in French, perhaps because of its inconsistency in the input. These

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findings are discussed in the context of a usage-based model of language acquisition.

One of the great current debates in language acquisition concerns whether children might learn grammatical conventions such as the use of word order to mark agent–patient relations, or whether there is some innate component to this linguistic knowledge. Whilst all theorists concur that children need to learn whether agent–patient relations are marked with word order (as opposed to, for example, case) it remains debatable as to how abstract early knowledge of word order is in languages that make use of it.

Some accounts propose that children fix the value of a head direction parameter by the age of two on the basis of minimal positive evidence and henceforth are confident about the ordering of verbs and complements for all lexical items they have recognized as such (Radford, 1990, 1997). Other accounts (e.g. for German, Clahsen, Eissenbeiss & Penke, 1996) argue that, for phrase-structure representations and functional categories to develop fully, children will need to learn about the lexical and morphological specificities of their language. They thus predict later mastery of word order but still argue that once knowledge of the language relevant structures and categories is in place it will apply equally to all lexical items regardless of their frequency. Both of the above accounts would thus predict very early knowledge of word order that should apply across the board: children will not expect some verbs to take one word order and other verbs to take another.

More recent accounts do not propose innate knowledge of word order per se but rather of thematic roles, which would permit rapid abstraction of agent–patient markers (Gertner, Fisher & Eisengart, 2006). Constructivist accounts (Tomasello, 2003) also argue for learning through abstraction, although they do not posit innate thematic roles. Instead they propose that the function of word order is acquired by generalizing across lexically specific examples. This learning process is predicted to extend into the third year of life and to be affected by how transparent a cue word order is in the given language. Some theorists in the constructivist tradition further argue that the predominance of a small number of semantically general verbs in a construction can help children to learn the general meaning of argument structure constructions (Goldberg, 2006; Ninio, 1999).

Recent preferential looking studies suggest very early sensitivity to the function of SVO word order in English (Gertner et al., 2006), which might be taken to support one of the more nativist accounts of development. However, other studies have demonstrated that this early knowledge strengthens and generalizes with time, suggesting a more prolonged learning period. For example, experiments using the weird word order methodology (Abbot-Smith, Lieven & Tomasello, 2001; Akhtar, 1999; Matthews, Lieven, Theakston & Tomasello, 2005) have shown that if an experimenter models a
verb in an ungrammatical word order, (e.g. saying *Elmo the car meeking*) then two-year-olds may adopt this weird word order with less familiar or nonce verbs, but will prefer to correct it to canonical word order if the verb is well known. Three-year-olds, in comparison, show a far more verb-general preference for canonical word order and generally correct the experimenter’s odd example to, for example, *Elmo’s meeking the car.*

Constructivist accounts of language acquisition (Tomasello, 2003) explain these results by proposing that children learning English draw on the similarities between the transitive sentences they hear (e.g. *John hit the ball* and *I hit it*) to first generalize lexically-specific constructions (e.g. Agent-hit-Patient) and then form a more abstract SVO construction. Importantly, lexically-specific constructions need not only be formed around verbs. Rather, any high frequency lexical item that is relatively consistently ordered could anchor emerging word order schemas (cf Pine, Lieven & Rowland, 1998). Pronouns make good examples of such lexical items in that they are case marked and thus distributionally quite restricted: they often occur in the same place with respect to the verb and the sentence as a whole. On this account, lexically specific schemas such as ‘I VERBed it’ should be easy to learn. The more numerous the constructions of this type a child has and the more transparent the overlap between them is, the easier it will be to generalize a more abstract transitive construction via analogy (Childers & Tomasello, 2001).

This account tells a neat story for the acquisition of English, since lexically based schemas of the form ‘I VERBed it’ are formally very similar to most other transitives (e.g. *John hit the ball*), especially in terms of argument ordering. It does not require a great leap of the imagination to see how such similarities might be detected and drawn upon in acquisition. However, it is not the case that all languages that use word order as a marker of agent–patient relations show such consistent and similar ordering. In French, for example, lexical objects come after the verb whereas pronominal objects are clitics that directly precede the verb, as is illustrated in sentences (1) and (2).

(1) sVO  Il pousse *Mary*  
‘He pushes *Mary*’

(2) soV  Il *la* pousse  
‘He pushes *her*’

Non-SVO word orders are also witnessed in relativized object constructions (e.g. *L’homme que connaît Jean est sympa* ‘The man that John knows is nice’), written interrogatives (*Connaît-il cet homme?* ‘Does he know this

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[1] In all word orders abbreviations (e.g. sVO), capital letters designate full nouns and small letters represent clitics (pronouns). A summary of French personal pronouns is given in Appendix A.
man?’) and in left and right dislocations (see Clark, 1985 and Kail, 1989 for useful summaries of the grammatical characteristics of French). Dislocated constructions are very common in spoken French and express the subject or object with a clitic as well as a (left or right) dislocated lexical noun phrase. Sentences (3) and (4) are examples of dislocated constructions.

(3) SsVO Jean, il pousse Mary
   ‘Jean, he’s pushing Mary’
(4) sVOS Il pousse Mary, Jean
   ‘He’s pushing Mary, Jean’

Since it is possible to dislocate either or both the subject and the object to the left or right of the sentence, there are numerous ways of expressing simple transitive utterances in French to varying pragmatic effect (Lambrecht, 1994). Further word order variations are made possible when the pronoun ça is employed in dislocations.²

Given these complications, a constructivist theory of language acquisition would predict French-speaking children to have a harder time converging on the possible word orders of their language than English-speaking children.³ More specifically, the fact that constructions containing pronoun objects do not share the same order as those containing full noun objects means that children learning French cannot straightforwardly generalize from lexically specific constructions to a ‘one size fits all’ transitive by means of straightforward analogy.⁴ Consequently, children learning French should converge on a network of transitive (and other) constructions in a qualitatively different way to English-learning children. The investigation of how this is achieved raises two fundamental questions. First, how do children perceive similarities between different lexical instantiations of related constructions and organize these into a network? Second, does a relative lack of similarity between related constructions affect the creation of a construction

² Although this variation in word orders seems considerable, it is worth noting that whilst dislocated noun phrases may occur at the left or right of the sentence, they are always accompanied by clitic pronominal counterparts which are always faithfully ordered in subject object order just before the verb. Indeed one of the defining characteristics of clitics is that they cannot be separated from the verb. The only major exception to this ordering of clitics is the imperative construction, where the object clitic follows the verb, for example, Prends-le! ‘Take it!’

³ Although see Naigles & Lehrer (2002) for an alternative argument that flexibility in French word order would aid the acquisition of argument structure by forcing children to rely on more than the frame or argument positioning for sentence interpretation.

⁴ An additional complication that French children must overcome lies in the homophony of direct object clitics and definite determiners (le, la and les). This is particularly problematic in cases where a clitic precedes a verb that could be interpreted as a noun. For example, the sentence Il le timbre (literally ‘He it hit’=‘He hit it’) is hard to interpret since the clitic-verb combination le timbre could be misconstrued as a high frequency determiner-noun combination meaning ‘the stamp’.

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network? These questions are addressed in the current paper by replicating recent English weird word order production studies in French.

Previous studies of French word order have concentrated on comprehension and, in particular, on identifying the heuristics children use to interpret ungrammatical word combinations (Kail, 1989; Kail & Segui, 1978; Sinclair & Bronckart, 1972). For example, Kail (1989) asked children aged 2;6, 3;6, 4;5 and 5;6 to act out 56 sentences which differed according to word order, animacy, prosody and topic. The verbs were conjugated in the present tense and determiners were used. This meant that, of the three orders heard, NVN was grammatical whilst NNV and VNN were not. French children of all ages tended to act out the canonical NVN utterances as SVO. The non-canonical NNV and VNN utterances were enacted randomly at 2;6, according to a ‘lexeme nearest the verb = subject’ strategy at 3;6 and by taking the first noun as the agent from 5;6. Overall, word order was the most important cue for the French children, but this was increasingly supplemented by animacy information (particularly for non-canonical utterances) as development progressed. Indeed, this reliance on word order cues must diminish considerably over development as it is not a trait of the adult French speaker. Adults given the same stimuli only chose the first noun in an NVN sequence to be the subject 67% of the time, suggesting a much greater dependency on other pragmatic cues. Kail proposes that this reduced reliance on word order is due to the greater variety of orders permitted in French in the form of dislocated constructions. She suggests that ‘these competing structures are activated through partial overlap even though the simple sentences that were presented had no clitic particles in them’ (Kail, 1989:96).

Given this apparently influential role of dislocated structures with subject and object clitics, Charvillat & Kail (1991) questioned the psychological reality of the canonical French sentence in which full nouns are in SVO order. They tested the effect of main nominal constituent order on processing times for sequences of the form NNV and NVN. Some of the sentences also had object and/or subject clitics, making them grammatical, others not. They tested adults and children at ages 6;6, 8;6 and 10;6 and found that grammatical NNV (SoVO) sequences were processed significantly quicker than ungrammatical NVN (SOV) sequences that lacked object clitics. Equally grammatical NVN and NNV sequences were processed equally quickly. This confirmed that it is grammatical acceptability rather than proximity to canonical NVN form that affects sentence-processing speed.

Charvillat & Kail also tested whether the relative complexity of coreferencing patterns between clitics and nominal constituents would affect processing time more than the order of the nominal constituents (NNV or NVN) per se. They did this by comparing the processing speed of grammatical sentences of the form (a) SsoVO, (b) OsoVS, (c) SOsoV
or (d) O^{-}S^{-}so^{-}V.\textsuperscript{5} The first of these orders was predicted to be quickest to process as it has pronouns co-referring with nominal counterparts linearly. The last order was predicted to be slowest to process as it has an embedded object. In contrast, the ordering of major nominal constituents (N^{V^{-}}V^{N} (a,b) versus N^{N}V^{V} (c,d)) was predicted to have no effect on processing time. This latter prediction was supported. The co-referencing complexity predictions were borne out for some sentence comparisons at some ages. However, since these effects were not consistent across ages, whether co-referencing complexity alone is driving sentence-processing speed is unclear. Indeed, although previously mentioned word order heuristics or even the relative frequencies of the different orderings are not necessary to resolve these particular sentences, these factors may equally have made some sentences quicker to process. Moreover, since all the sentences were unambiguous due to gender and number (and animacy) cues it remains unclear whether the order of nominal constituents would play a greater role in ambiguous sentences (as shown by Kail, 1989).

The major argument put forward by Charvillat & Kail, that canonical word orders will have little psychological reality if we ignore the role played by clitics, is clearly a strong one. However, the conclusion that ultimately word order is not a valid cue for sentence processing in French is perhaps overstated. Whilst word order does not exclusively mark agent–patient relations, this is not to say that there is no symbolic work to be done by word order(s) in French. Rather, Charvillat & Kail’s results could be taken to show that, for any grammatical French sentence, word order markers will be carried by different elements: pronouns if they are present, lexical arguments if not. This conclusion is supported by Lambrecht’s (1994) Principle of the Separation of Reference and Role, whereby ‘the lexical representation of a topic referent takes place separately from the designation of the referent’s role as an argument in a proposition’ (Lambrecht, 1994:185). So, in a sentence such as (5), L’ours names the referent that is the topic of the sentence and il, as an argument of the verb pousse, establishes the semantic role of the referent.

(5) L’ours, il pousse le renard.

Ss\textsuperscript{V}O – ‘The bear, he’s pushing the fox.’

\textsuperscript{5} Examples of the test sentences are as follows:
(a) Ss\textsuperscript{V}O: Le lapin il la fait briller sa trompette. ‘The rabbit he it polishes his trumpet.’
(b) Os\textsuperscript{V}O: La pieuvre ils la font fuir les poissons. ‘The octopus they her make flee the fish.’
(c) So\textsuperscript{V}O: Le pilote toutes les fusées il les connaît par cœur. ‘The pilot all the rockets he them knows by heart.’
(d) Os\textsuperscript{S}S\textsuperscript{V}: Les vaches la sorcière elle les préfère en bifteck. ‘The cows the witch she them prefers as steak.’
This suggests that only the arguments of the verb tell us ‘who is doing what to whom’. Thus, the order of the major nominal constituents of French sentences may be of little concern but the order of the arguments of the verb, be they lexical or pronominal, remains informative. It is possible, then, that children will generalize a set of canonical schemas or constructions such as SV, sV, sVO, SsvO, soV and so on from lexically specific exemplars and gradually link these where it is possible to do so. Knowledge of the function of word order as a grammatical marker (amongst other cues) would be immanent in these constructions.

The current study set out to test the proposal that French children build up an increasingly abstract inventory of constructions in this way. In doing so, it sought to address five major questions:

1. Do French children show more robust preferences for grammatical word orders when using them with high frequency verbs?
2. Which versions of the French transitive construction do children use most often early on?
3. According to what features or similarities do French children organize transitive and related constructions?
4. Does a relative lack of similarity between soV and sVO transitives hinder the generalization of constructions in general and of the object role in transitives in particular?
5. Might differences in the input French and English children hear also affect the development of transitive constructions in these languages?

To address the first question, a weird word order study was conducted in French. Children heard high or low frequency verbs modelled by an experimenter in either SOV or VSO order (both of which are ungrammatical in French when clitics are not present). The effect of verb frequency on children’s use of these weird word orders is assessed. This will give an indication of the relative lexical specificity of French children’s word order knowledge and thus whether this is likely to be learnt by generalizing over item-based constructions.

In response to the second question, the constructions children used when correcting the weird word orders are analyzed to give an overview of which constructions French children prefer to use at the earliest stages of grammatical development, something which is currently little understood for French.

To address the third question, the use of grammatical constructions is compared for differences with age and according to the weird word order the children heard (SOV or VSO). This will highlight the features of the

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[6] Only when both the subject and the object are clitics of the same person, gender and number does this informativeness break down (e.g. Elle l’a vu).
weird orders that children respond to and attempt to accommodate in their grammatical responses. For example, weird SOV models might be corrected to grammatical soV responses due to the similarity in argument and verb ordering. We could then infer that these features of linear order are salient and relevant organizing factors for the child. Alternatively, other features might be more important, such as the absolute position of the verb as sentence initial or final, or the occurrence of referring expressions in the postverbal position. The idea is thus that if one weird word order systematically ‘primes’ a specific grammatical construction in response, we will be able to identify the features the two have in common and posit this similarity as being a salient organizing feature in the developing construction network.

To answer the fourth question, cross-linguistic comparisons are drawn between the current study and the English weird word order study reported in Matthews et al. (2005) in terms of expression of the object. This will provide an indication of how differences in the distribution of objects in the two languages affect their developmental trajectories. If generalization is easier when all items that perform a similar function (e.g. denote a patient) share the same formal marker (e.g. postverbal position), then French objects should be harder to acquire and used less successfully than is the case in English.

Finally, to address the fifth question, a brief analysis of French and English child-directed speech (CDS) is presented with the aim of elucidating how differences in the speech children hear might explain differences in their grammatical development.

METHOD

The method was as similar as possible to that of the English weird word order study reported in Matthews et al. (2005). There were two verb frequency conditions: HIGH and LOW, two weird word orders: SOV and VSO and two age groups: TWO-YEAR-OLDS and THREE-YEAR-OLDS. This yields eight (2 ages × 2 verb frequencies × 2 word orders) between-subjects conditions.

Participants

One hundred and twelve normally developing, monolingual French-speaking children participated in the study (58 boys, 54 girls). The 56 children in the younger age condition were of a mean age of 2;10 months (range 2;3–3;2). The 56 older children had a mean age of 3;9 (range 3;3–4;3). A further 28 children were not included in the study due to experimenter error or because they failed to complete the testing session or to produce any
multiword utterances using any verb to describe the actions. All the children were tested in a quiet room in their primary school or daycare centre in Lyon, France.

**Materials and design**

Eight transitive verbs were used to form two between-subjects conditions on the basis of verb frequency. Four high frequency verbs (pousser ‘push’, tirer ‘pull’, frapper ‘hit’ and embrasser ‘hug/kiss’) and four low frequency verbs (percuter ‘ram’, haler ‘haul/tug’, tapoter ‘tap’ and enlacer ‘hug/embrace’) were identified using frequency counts from the LEXIQUE and BRULEX online lexical databases (New, Pallier, Ferrand & Matos, 2001; Content, Mousty & Radeau, 1990). The high frequency verbs were then identified in the French corpora available on the CHILDES database (MacWhinney, 2000) to check if two- and three-year-olds were likely to be familiar with them. The verbs pousser and tirer were found to be more frequent than frapper and embrasser, but the latter two verbs are still high frequency in CDS relative to their low frequency matches, which are never encountered.

Verbs were selected on the criteria that they should, as far as possible: (i) be exclusively transitive; (ii) have a semantic match in the corresponding frequency condition; (iii) be able to take several animate subjects and objects; (iv) map to equally complex actions; and (v) be equally nominalizable at all levels (with the verb being more frequent than any homonym nouns – i.e. /pus/ is more frequently used to mean pousser ‘push’ than to mean la pousse ‘a shoot/seedling’ or le puce ‘the thumb’). We did not meet the first of these criteria for the verb pousser, which can be used intransitively to mean ‘to grow’ and tirer, which may also be used intransitively (often with a prepositional phrase e.g. tirer sur une ficelle ‘to pull on a string’). Since both verbs are most often used transitively in CDS and since they were always used with a support video of one animal pushing or pulling the other, we felt confident that the transitive sense of the verb would be easily understood. Furthermore any problems with the mixed transitivity of these high frequency verbs would run counter to our prediction of a facilitative effect of verb frequency – i.e. children should, if anything, have more problems with these mixed-transitivity, high frequency verbs than with lower frequency verbs. Recent preferential looking studies in French in fact indicate that children have no more difficulty understanding transitives that contain mixed verbs than transitives that contain exclusively transitive verbs (Kail,

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[7] Here the semantics of the low frequency verbs are more specific/restrictive than their higher frequency counterparts but can nonetheless be used felicitously to describe the same video.
Boibieux & Coulaud, 2005). Two further between-subjects conditions were formed on the basis of modelled word order. Half the children heard verbs modelled in SOV order and the other half in VSO order. Both of these orders are ungrammatical in French when full nouns are used without clitics.

To ensure that each child saw precisely the same stimuli, videos of hand puppets acting out the verbs were made. Since the verbs had been semantically matched across verb frequency conditions it was possible to use precisely the same video clips for both verb frequency conditions (i.e. the same video clips were used to model pousser and percuter).

Each verb to be tested was enacted twelve times, each time by a different combination of hand puppets (a fox, a bear, a seal, a duck, an elephant and a giraffe). These enactments were compiled into a silent video that the experimenter and the child would take turns in describing. The enactments for each verb were compiled in pseudo-random order to ensure that any enactment to be described by the child would not: (i) contain the seal (as this animal was too difficult to name for some children); or (ii) contain the same agent or patient as the previous clip (this was essential to ensure that the child could not describe any enactment by simply repeating what the experimenter had said for the previous clip).

The order of presentation of verbs was counterbalanced such that, for each frequency condition, each verb was presented first, second, third or fourth an equal number of times for the experiment as a whole. All the videos were of precisely the same duration (13 minutes).

Procedure

First, the experimenter (henceforth E) introduced the child to the hand puppets and checked s/he knew what they were. E proceeded to use proper names for each puppet based on those used by the child (e.g. Il s'appelle Nounours. Il vit dans le sac magique avec Éléphant ‘He’s called Teddy. He lives in the magic bag with Elephant’). The child then sat in front of the video screen with E and was asked if s/he could help say what the animals were doing in the video. E enacted each verb with the hand puppets before its first presentation, saying, for example, Est-ce que tu sais ce que ça veut dire ‘Percute’? Regarde! Voici ce que l’on fait quand on percute! Est ce que tu peux dire ‘percuter’? ‘Do you know what “ram” means? Look! This is what we do when we ram! Can you say “ram”? ’ It was necessary to use the verb in the conjugated form in order to distinguish the infinitive of haler ‘to haul’ from aller ‘to go’. E did not insist that the child repeat the verb if s/he if preferred not to.

E then described the first video clip. Each description by E entailed modelling the verb four times in the given weird word order, in the present tense. There are no auxiliaries in the present tense in French. For example,
she would say, *Oh! Regarde ce que fait Renard à Canard! Renard Canard Pousse! T’as vu ?! Renard Canard Pousse! Oh la la, Renard Canard Pousse! Renard Canard Pousse!* ‘Oh! Look what Fox is doing to Duck! Fox Duck pushing!’ etc. After three such clips (i.e. twelve verb models), E elicited a response from the child by asking, for the next clip, *Qu’est-ce qui se passe?* ‘What’s happening?’ The video was paused if the child needed more time to answer and, if necessary E would ask a second time, for example saying, *Qu’est-ce que tu vois là?* ‘What do you see there?’ The target action was replayed if the child was distracted and missed the video clip. If the child did not respond, E did not repeatedly question the child but simply moved on to the next clip. For the remaining clips for that verb, E and the child took turns in commenting on the video. To avoid boredom, only six (of a total of twelve) clips of a verb were shown at a time. After all the verbs had been seen a first time the remaining six clips per verb were presented. An example of the script and accompanying videos is given in Appendix B.

To summarize, each child was exposed to 4 verbs of either high or low frequency in either SOV or VSO order. Each verb had 12 corresponding video clips. Seven clips were described by E. For each of these clips E modelled the verb 4 times (giving a total of 28 weird models per verb). Five clips were used to elicit responses from the child. Thus, the child could respond 5 times for any given verb, giving a total of 20 possible responses per child.

**Coding**

A transcription of the child’s utterances was made during the experiment by E and a second observer. These transcripts were checked against audio recordings of the experimental session. Both elicited responses and spontaneous utterances were transcribed. Sentences were classified as matching the weird order or as reverting to canonical order with one or two arguments. The use of verbs differing from those modelled by E was coded separately. The data were also coded for nominal versus pronominal argument type and for left and right dislocations of the subject and object. Any unintelligible utterances were discarded. The first author coded all of the transcripts. A third investigator, a native French speaker blind to the hypotheses of the experiment, transcribed and coded 20% of the recordings. Reliability was very good: Cohen’s kappa was 0.973.

**Actor construal**

The transitive verbs used in the current experiment were designed to be semantically reversible, i.e. they take both animate agents and patients. As a consequence, it was necessary to check that children intended their NNV matches to be SOV and their VNN responses to be VSO. At the end of the
experiment, each child was shown one video clip again of the verbs for the action ‘to hit/to tap’ and was asked C’est qui qui frappe? ‘Who’s doing the hitting/tapping?’ or, if this failed to produce a response, C’est qui le méchant qui frappe ici? ‘Who’s the nasty one that’s hitting here?’ This acted as a simple measure of the intended subject of the sentence. All responses expressed a single subject, providing some reassurance that the first noun only was construed as the (single) agent. The results of this test are thus not discussed further.

RESULTS

Only elicited responses that used a test verb along with one or two appropriate arguments are analysed.\(^8\) These responses were categorised as: (i) MATCHES: matched the weird (SOV or VSO) word order; (ii) SINGLE ARGUMENT REVERSIONS: reverted to canonical word order with one argument (either SV or VO); or (iii) FULL REVERSIONS: reverted to canonical word order with two arguments (to SVO or occasionally SoV order if using a pronominal object). Only the first full transitive utterance or, failing this, the first single argument response for any given elicitation is counted. As some individuals were more talkative than others, the results were analyzed in terms of mean proportions of responses. Frequency information is provided in Table 1 because of the small number of responses contributing to some cells. Thirteen two-year-olds and 10 three-year-olds did not use a test verb at any point and instead preferred to use alternative, often higher frequency, verbs in their place. The remaining two-year-olds gave responses containing a test verb.

Table 1. Frequency of matches, single argument reversions and full reversions as a function of age, verb frequency and modelled order (N = number of children contributing data with these response types)

<table>
<thead>
<tr>
<th>Age</th>
<th>Verb frequency</th>
<th>Weird order</th>
<th>N</th>
<th>Match</th>
<th>Single reversion</th>
<th>Full reversion</th>
<th>Total reversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2;10</td>
<td>Low SOV</td>
<td>7</td>
<td>5</td>
<td>28</td>
<td>3</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low VSO</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High SOV</td>
<td>14</td>
<td>13</td>
<td>52</td>
<td>28</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High VSO</td>
<td>13</td>
<td>8</td>
<td>42</td>
<td>55</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>3;9</td>
<td>Low SOV</td>
<td>9</td>
<td>18</td>
<td>28</td>
<td>3</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low VSO</td>
<td>6</td>
<td>31</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High SOV</td>
<td>13</td>
<td>23</td>
<td>69</td>
<td>36</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High VSO</td>
<td>14</td>
<td>25</td>
<td>43</td>
<td>72</td>
<td>115</td>
<td></td>
</tr>
</tbody>
</table>

\(^8\) Although they contain appropriate referring expressions, responses of the form OSV and VOS were excluded. In total 39 responses of the form OSV and 18 responses of the form VOS were recorded for SOV and VSO modelled conditions respectively. Other alternative response types included reflexives and ‘semantic errors’—notably using the verb pousser to describe pulling actions (but using the pulling agent as the subject).
18% of the time in the low frequency condition \((SD = 2.6)\) and 37% of the time in the high frequency condition \((SD = 5.2)\). The three-year-olds gave responses containing a test verb 25% of the time in the low frequency condition \((SD = 3.57)\) and 48% of the time in the high frequency condition \((SD = 4.8)\). Figure 1 reports the mean proportion of matches, single argument reversions and full reversions for each condition at 2;10. Figure 2 charts these mean proportions for the 3;9 age group.

The proportion of matches, single argument reversions and full reversions were analysed with three separate 2 (age) \(\times\) 2 (frequency) \(\times\) 2 (order) ANOVAs \((N = 84)\). None of the tests revealed any significant interactions or effects of age. We will return to the lack of age effect in the discussion but will henceforth refer to ‘the children’ as both age groups unless otherwise specified. The ANOVA on matches revealed a main effect of verb frequency \((F(1, 76) = 11.5, p = 0.001)\). This replicates in French the effect of verb frequency on word order preferences found in English and is consistent with the view that the ability to use word order as a grammatical marker emerges out of lexically specific representations. There was no effect of modelled word order.

The ANOVA on single argument reversions revealed a borderline effect of modelled word order \((F(1, 76) = 3.7, p = 0.058)\) only. This indicates a higher use of single argument responses in the SOV condition than in the VSO condition. Almost all of these single argument reversions were of the form SV (there were 267 SV responses and 3 VO responses in total). This might suggest a tendency to interpret verb final sentences as approximating to an existing SV schema, encoding the subject only. There was no effect of verb frequency.
The ANOVA on SVO reversions revealed a significant effect of verb frequency \( (F(1, 76) = 14.8, p < 0.001) \) and a significant effect of modelled word order \( (F(1, 76) = 5, p = 0.028) \). As verb frequency increases children are much better equipped to give full, two-argument responses. These responses are also more predominant in the VSO condition than the SOV condition.

The children were not more likely to adopt the SOV model than the VSO model. However, as predicted, they reverted to different grammatical forms according to the modelled word order condition they were in, apparently correcting weird orders to similar, grammatical alternatives. The following analysis considers more precisely which forms children used in reverting in each condition. First we consider which constructions the children used when correcting the weird word order, as little is known about the structures employed by children between two and four years. We then look at how the use of these forms differed according to the modelled word order the children heard and age.

**Grammatical constructions preferred by French children**

Table 2 lists, in descending order, the constructions the children employed when correcting a weird word order.\(^9\)

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\(^9\) Responses of the form VO are not grammatical transitives but are included here as they are considered a partial correction to a grammatical construction (in contrast with matching a weird word order).
The subject was expressed by both a clitic and a dislocated lexical subject (SsV, SsVO, sVOS and sVS) almost a quarter of the time. Subject clitics were almost always the masculine il, even when the feminine form elle, was required. It was not uncommon to hear sentences like La girafe, il frappe l’éléphant, which demonstrate this error quite clearly. Objects were expressed less than a third of the time. Vanishingly few object clitics were used. Although it is arguably difficult to detect combinations with a pronominal subject and a masculine object (i.e. to differentiate between il le pousse and il pousse), in reality neither of the native coders found difficulty with this as the vast majority of children responded with the form i pousse, where the l of il is not pronounced at all. We can thus be certain that no object clitic was there. Object clitics are potentially harder to detect with the verbs embrasser and enlacer, which begin with a vowel. However, since one verb, embrasser, falls in the high frequency condition and the other, enlacer, in the low frequency condition, any undetected clitics should not affect our results.

Table 3 details the constructions used by the children when reverting to canonical word order for each age and modelled word order condition. Partial preferences for canonical word order (e.g. VO) are included. Only high frequency verb conditions are considered as there were very few such responses for low frequency verbs. All constructions that were employed more than three percent of the time for the given condition are shown.

For all the conditions the most favoured response was always of the form subject clitic – verb (i.e. ‘il VERBE’). Indeed for some children it is questionable whether the clitic-verb unit is analyzed into its component parts. Expression of the object clearly differs according to modelled word order. At 2;10, 24% of responses to SOV models expressed the object compared to 46% for VSO models, and at 3;9, 21% of responses to SOV models expressed the object compared to 61% for VSO models.
Conversely, preverbal subjects were much more likely to be expressed lexically after an SOV model (40%) than after a VSO model (22%). It would appear that the different weird word orders had ‘primed’ the constructions that were more similar to them: SOV models were more likely to result in SV responses, VSO models were more likely to result in an sVO construction. If it is in fact the case that the modelled word orders had caused children to opt for the nearest grammatical alternative for their responses, then it is interesting that SOV models did not elicit soV responses. In fact the reverse was true – only the 3;9 group in the high frequency VSO condition used this form.

**Comparison of responses in English and French**

The following cross-linguistic comparisons between the current results and those of the Matthews et al. (2005) study should be interpreted with caution. In each of the studies, we used the same materials to construct videos and we tested similarly aged children (2;9 and 3;9 for the English study, 2;10 and 3;9 for the French study). However, some of the actions performed by the puppets were different (only pushing and pulling were used in both studies) and the verbs were not matched for frequency across languages. Consequently, some comparisons cannot be fairly made. For example, although the French children corrected the weird word order less than the English children, this could be due to the rarity of the low frequency French verbs.

A more valid comparison consists in comparing object use (and non-use) in the two languages for responses where children chose to revert to the canonical order of their language (however often that may be). This reveals a striking difference in that French children scarcely used object pronouns, whereas a quarter of the objects expressed by English children were pronominal. Furthermore, the French children used far fewer lexical objects.

<table>
<thead>
<tr>
<th></th>
<th>Age: 2;10</th>
<th>Age: 3;9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High SOV</td>
<td>High VSO</td>
</tr>
<tr>
<td>sV</td>
<td>44%</td>
<td>39%</td>
</tr>
<tr>
<td>SV</td>
<td>25%</td>
<td>20%</td>
</tr>
<tr>
<td>sVO</td>
<td>12%</td>
<td>11%</td>
</tr>
<tr>
<td>SsVO</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>sVS</td>
<td>3%</td>
<td>8%</td>
</tr>
<tr>
<td>sVOS</td>
<td>3%</td>
<td>7%</td>
</tr>
</tbody>
</table>
than their English counterparts. This was the case even when we compared like for like conditions. Figure 3 shows how French and English children used objects when correcting to canonical word order (with one or two arguments). It compares only the verb pull in English with tirer in French (including only the SOV modelled condition from the French study, since this was the only ungrammatical order modelled in the English study) and indicates whether the children expressed the object lexically, pronominally or not at all. Highly similar results were obtained for the comparison between the verbs pousser and push.

French children generally did not express the object at all when they corrected the weird word order. The English children generally did so with a lexical object and occasionally with a pronoun. This difference in the expression of lexical objects in reversions with the verbs pousser, tirer, push and pull was shown to be significant with a 2 (verb) × 2 (age) × 2 (language) ANOVA with proportion of lexical objects as the dependent variable. This revealed a significant effect of language only (df = 1, F(1, 50) = 12.5, p = 0.001). It may be that the French children’s responses were affected by the mixed transitivity of the verbs pousser and tirer, which can be used intransitively in French (although the transitive form is dominant). However, to the extent that tirer is used intransitively in French, pull is similarly used intransitively in English (compare tirer sur la ficelle with pull on the string). Indeed, pull and push were classified as mixed transitive verbs in a recent study of CDS (Theakston, Lieven, Pine & Rowland, 2001). Furthermore, the tendency to omit objects in French more than in English (even with exclusively transitive verbs) is consistent with findings for French–English bilingual children (Paradis, Crago & Genesee, 2002; see
also Serratrice, 2004, for a similar contrast in spontaneous Italian and English child speech).

These results are in line with the hypothesis that the inconsistent distribution of objects in French may hinder their acquisition. In English, analogy and functionally based distributional analysis would allow children to form a single object slot after the verb, whereas in French the two object types would have to ‘make their own way’ in a developing construction network. This would be all the harder for object clitics due to their lack of phonological salience (e.g. in sentences like *Il le mange*), their homonymy with definite articles (*le, la, les*) and contrast with disjunctive pronouns (*moi, toi, lui, elle*, etc.). A potential objection to this proposal is that French children might simply hear fewer objects in use than their English counterparts. That is, all French speakers might overtly express objects less than English speakers (Lambrecht & Lemoine, 2005). The following comparison of CDS in the two languages seeks to address this issue and to illuminate the types of word orders children are likely to hear in the two languages for the verbs we compared experimentally. In this simple analysis, we compare the major word orders and object use cross-linguistically.

**Comparison of English and French CDS**

Data for the French CDS analysis were obtained from six corpora. These consisted of the Champaud, Leveille, Rondal and York (Lea and Anne) corpora (De Cat & Plunkett, 2002; MacWhinney, 2000; Rondal, 1985; Suppes, Smith & Leveillé, 1973) available from the CHILDES database (MacWhinney, 2000) and the Macrory corpus, which consists of conversations exclusively in French between a native French-speaking mother and a bilingual (English–French) child (Macrory, 2004). The CDS of the mothers of the first six children of the Manchester corpus (Theakston et al., 2001), also available on CHILDES, provided the data for the English analysis. This gave approximately two hundred hours of recorded speech for each language and a similar number of CDS utterances containing the relevant verbs to analyse (611 French utterances, 641 English utterances). The age of the children ranged from 1;9 to 4;8. Their mothers’ speech was therefore considered to be a representative sample of the speech we might expect our experimental subjects to hear.

All utterances containing the verbs *push* and *pull* in English and *pousser* and *tirer* in French were extracted from the corpora. These utterances were then coded in terms of the order of the verb and its arguments, argument type (lexical/pronoun) and construction type (e.g. imperative, question, cleft). For the purposes of the current analysis of French CDS, the pronoun *ça* ‘that’ is counted as lexical (as it occurs postverbally). We counted even quite complex constructions as SVO. For example, sentences such as *There
was one trying to pull the piece of wool or Tu ne veux pas aller tirer le rideau, là? ‘Won’t you go and pull the curtain, there?’ were classified as SVO. The category VO is mainly comprised of imperative constructions as is the category V, which also includes instances when a verb was used after a dummy subject (e.g. \( \text{Il faut pousser} = (\text{Expletive}) \) ‘It must push’ = ‘You have to push’).

The following comparison of French and English considers the major observed word orders only.\(^\text{10}\) This includes all sentences with a wh-element as an argument that followed conventional word order (e.g. \text{Who pushed you?} but not \text{It was who that you pushed?}, which was less frequently observed). It discounts clefts, reflexives, passives, intransitive uses of pousser and other infrequent exceptions. Consequently what follows is intended only as a coarse-grained analysis of the word orders heard by the children sufficient to permit comparison of object use in the two languages. Table 4 shows the frequency with which each word order is used for each verb and converts this frequency to a percentage of all uses of major word orders for the given verb. The number of English SVO utterances in which the object was a pronoun is given in parentheses after the total number of SVO constructions for each verb.

Overall French mothers expressed the object with the verbs pousser and tirer approximately 64% of the time, whereas English mothers did so approximately 80% of the time with the verbs push and pull.\(^\text{11}\) This balance

<table>
<thead>
<tr>
<th></th>
<th>Pousser Frequency</th>
<th>Pousser Percentage</th>
<th>Tirer Frequency</th>
<th>Tirer Percentage</th>
<th>Push Frequency</th>
<th>Push Percentage</th>
<th>Pull Frequency</th>
<th>Pull Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVO</td>
<td>50</td>
<td>26%</td>
<td>116</td>
<td>31%</td>
<td>112(69)</td>
<td>39%</td>
<td>145(56)</td>
<td>42%</td>
</tr>
<tr>
<td>SOV</td>
<td>20</td>
<td>11%</td>
<td>34</td>
<td>9%</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>SV</td>
<td>39</td>
<td>21%</td>
<td>46</td>
<td>12%</td>
<td>13</td>
<td>5%</td>
<td>15</td>
<td>4%</td>
</tr>
<tr>
<td>VO</td>
<td>34</td>
<td>18%</td>
<td>121</td>
<td>32%</td>
<td>108</td>
<td>38%</td>
<td>140</td>
<td>41%</td>
</tr>
<tr>
<td>V</td>
<td>47</td>
<td>25%</td>
<td>63</td>
<td>17%</td>
<td>52</td>
<td>18%</td>
<td>45</td>
<td>13%</td>
</tr>
<tr>
<td>Total</td>
<td>190</td>
<td>100%</td>
<td>380</td>
<td>100%</td>
<td>285</td>
<td>100%</td>
<td>345</td>
<td>100%</td>
</tr>
</tbody>
</table>

\(^\text{10}\) Dislocations were also coded but not represented in Table 4. In total for the verb pousser there were ten right dislocations of the subject and three left dislocations of the subject. For the verb tirer there were three dislocations of the subject only. The adult speakers in the corpora clearly used dislocations considerably less in spontaneous speech with their children than did the children in the current study. This would confirm the ‘overuse’ of dislocation constructions by French children noted by Clark (1985) and Parisse (2004).

\(^\text{11}\) Chi-squared tests confirmed that the French mothers were significantly less likely to express the object for the verb pousser than were the English mothers for the verb to push \((df = 1, \chi^2 = 72.54, p < 0.001)\). Equally, the French mothers were significantly less

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might have been redressed a little if cleft constructions and reflexives were included. However, overall it would appear that French mothers tend not to express the object of these transitive verbs as much as the English mothers. In particular, the SV construction appears more predominant in French. Note that this naturalistic analysis does not necessarily imply that adult French speakers would deem it adequate to describe the videos in the current experimental study without expressing the object. Indeed, in an adult control test, two native French speakers described the videos used in the current experiment. Both speakers expressed the patient of the action unfailingly, suggesting that in this context at least it is necessary to express the object in French. However, it may suggest that in contexts where the object is contextually given, French speakers might not overtly express it at all whereas English speakers might do so with a pronoun (most frequently it).

This analysis is given some weight in that a comparatively large proportion of the English SVO utterances contained pronominal objects. So, in the English mothers’ SVO constructions, the object was a pronoun 39% of the time for pull and 62% of the time for push. In contrast, when the French mothers expressed both the subject and the object of the verb (i.e. summing SVO and SOV constructions) the object was a pronoun 29% of the time for tirer and 23% of the time for pousser. Further cross-linguistic comparison of simple event descriptions in varying pragmatic situations and with a greater number of verbs would be valuable to establish whether or not this difference in object expression is robust (for arguments that it is, see Lambrecht & Lemoine, 2005) and likely to affect the development of object expression across the board.

DISCUSSION

The aims of the current study were: (i) to establish whether the effects of verb frequency on the use of word order found in English would extend to French; (ii) to investigate which of the various possible word orders young French children prefer to use; (iii) to see how this varied in response to different weird word orders; (iv) to test the hypothesis that the different ordering of French lexical and clitic objects would hinder their expression; and (v) to illuminate the role that CDS might play in acquisition and the extent to which it can explain the results of the preceding investigations. These points are taken up in turn.

How does verb frequency affect word order use in French children?

The fact that French children were significantly more likely to match weird word orders with low frequency verbs than with high frequency verbs is in
line with the constructivist approach to language development, whereby grammatical knowledge is abstracted from the language children hear and use. As with English, children showed more robust preferences for the canonical orders of their language when using lexical items they knew well. These results do not follow straightforwardly from strong nativist accounts, which contend that a word order parameter is set by the age of two. Weaker nativist accounts that incorporate a greater degree of learning would be better placed to explain the results, but are hard to distinguish from constructivist accounts in terms of their predictions. Any account that proposes very rapid and early abstraction, however, might not have predicted the frequency effects we observed at 2;10 and 3;9.

One objection to the above conclusions might be that there were no audible morphological markers on the French verbs to help categorize them as such. Thus one might argue that abstract knowledge of word order is indeed available to the children but that they could not classify the low frequency items as verbs and so could not make use of abstract syntax. It is difficult for us to assess whether the French children understood the low frequency verbs as verbs. However, the fact that children combined these lexical items with two new referring expressions in the modelled word order implies that they were engaging with the task and making sense of it on a linguistic level. At the very least this demonstrates a swift ability to abstract a new construction of the type NP-NP-X or X-NP-NP, where X is used in response to any video depicting a given action. Whether this constitutes recognizing X to be a verb is of course open to debate.

Another potential criticism is that no effect of age was observed in the current study. In previous studies (Abbot-Smith et al., 2001; Akhtar, 1999; Matthews et al., 2005), the fact that older children were less likely to adopt a weird word order with novel items, or were simply unaffected by the frequency of the verb in their rates of copying, was taken as evidence that older children have more abstract syntactic representations that hinder their adoption of a non-canonical order. In the current study, the three-year-olds still tended to adopt the word order more often with lower than with higher frequency verbs. To fully understand this result we would need to assess what older French children would do. It is possible that the French transitive construction takes some time to strengthen and this effect would only peter out by the age of four.

Which word order configurations do young French children prefer?

As for the word order configurations French children actually prefer to use, a strong preference for sV constructions with a clitic subject was observed. Some children may have used these forms in an unanalyzed fashion. This construction then appears to be built upon by either adding a postverbal
lexical object, a dislocated lexical subject or both (sVO, SsV, SsVO). In addition, SV constructions with a lexical subject were commonly employed, sometimes with a lexical object (SV, SVO). In sum, 96% of children’s reversions to a canonical construction (or partial construction) fitted an s/SV(O) schema with or without a dislocated subject. Word orders with object clitics were extremely scarce.

How do differences in modelled word order affect grammatical responses?

The effect of modelled word order on children’s responses sheds further light on their preferred construction types and the features that organize them. The children were significantly more likely to give full SVO corrections in the VSO condition than in the SOV condition, where they gave more SV forms. It appears that each of the modelled word orders was more likely to be corrected to a similar grammatical alternative from the repertoire of constructions available to the children. Contrary to what one might have expected, the children did not give soV corrections of SOV models, which suggests that French children do not perceive pronouns and full nouns as interchangeable and were not affected by the similarity in argument ordering when choosing a grammatical response. In fact, the children used soV forms in response to VSO models only. The greater number of clitic initial responses in the VSO condition brings some psycholinguistic light to the proposition that clitics are verbal prefixes and thus the canonical French sentence can be understood as a verb initial structure: [clitic + verb (X)] (Lambrecht, 1987). Finally, children were far more likely to express the object in response to VSO stimuli. This indicates that the presence of postverbal referring expressions was assumed to entail the expression of the object.

The current effect of modelled word order is consistent with other results in the literature. Sinclair & Bronckart (1972) found that four-year-olds were more likely to act out NNV triplets intransitively than NVN or VNN items, confirming that NNV sequences are less likely to be interpreted as encoding an object than VNN sequences. Kail & Segui (1978) found that responses of the form ProVNN occurred only with VNN (not NVN or NNV) stimulus sequences. This was presumed to be because the adaptation allowed the order of this sequence to be preserved, making it easier for younger children to use. However, an apparent effect of animacy on the percentage of VNN stimuli that elicited ProVNN responses suggests that the children may have been influenced to some extent by an sVOS schema. Notably, 18% of subjects under the age of six gave proVNN responses to V-inanimateN-animateN stimuli in comparison with only 9% for V-animateN-inanimateN stimuli, suggesting that an sVOS schema might have made this response type more likely for the stimuli that fitted the semantic probabilities of this construction (objects generally being inanimate and subjects animate).
The above results strengthen the argument that children are not responding randomly to the weird word order models but are attempting to accommodate them in a developing linguistic system, albeit whilst recognizing their oddity. It appears that children give responses that match features of certain high frequency constructions in terms of the position of the verb and lexical nouns. Thus similarity judgments appear to be based not on literal sequences that have been heard before but on more abstract distributional regularities that can be generalized from the input (e.g. postverbal nouns generally encode a patient). Further studies, priming different grammatical constructions and fragments of these, would help to clarify which distributional cues children are relying on in correcting different weird word orders and how this changes with development. Potential distributional cues children might rely on would include the position of noun phrases relative to the verb, the position of noun phrases relative to each other, the position of noun phrases relative to other recurrent forms (inflections, auxiliaries), the absolute position of noun phrases in the sentence (sentence initial, medial, final) and the absolute position of the verb (sentence initial, medial, final).

Does a lack of overlap hinder the expression of the direct object in French?
The striking difference in object use between French and English children lends support to the hypothesis that a lack of overlap in the positions of French lexical and clitic objects might hamper acquisition. It would be helpful to replicate these results with a greater variety of verbs in a simple elicitation task, as the verbs we compared can be used intransitively in French. It may be that hearing verbs in the intransitive, even for another function, would make object expression less likely. To the extent that the English comparison verbs push and pull may also be used without a direct object (e.g. push down on the button), it is not clear how much our comparison was affected by verb transitivity. We are confident that the children in both the French and English studies understood that they were describing a transitive scene involving an agent and a patient. Taking our results in conjunction with previous findings (Paradis et al., 2002), we would argue that delay in object expression is not an artifact of our stimuli.

Constructivist accounts would predict object expression to be more difficult in French due to the variation in object ordering before and after the verb. When this lack of word order regularity is coupled with the predominance of postverbal objects in the input (or an adult tendency to drop given objects), the homonymy of clitic objects with definite articles and their general lack of phonological salience, it becomes clear why French object clitics in particular should be late to emerge on a constructivist account.
There are, however, several alternative explanations of this delay, mainly articulated in the generativist framework. One alternative proposal attributes the delay to the different status of subject clitics, which are considered weak pronouns and the more deficient object clitics, which are considered clitics that have head status (Cardinaletti & Starke, 1999; Hamann, Rizzi & Frauenfelder, 1996). However, this proposal has been rejected as it would predict that reflexive clitics should also have clitic status and be just as slowly acquired as object clitics, which is not the case (Van der Velde, Jakubowicz & Rigaut, 2002). A second account put forward by Jakubowicz, Nash, Rigaut & Gerard (1998; Van der Velde et al., 2002) is that pronominal clitics are categorically deficient (neither + nor – N) and as a consequence merge non-canonically. Jakubowicz et al. (1998) predict that object clitics would be harder to merge than subject and reflexive clitics and present results to demonstrate this with French-speaking children with specific language impairment and normally developing controls. Importantly, though, Jakubowicz et al.’s approach would not predict a delay in object use more generally – i.e. a relatively low rate of production of lexical objects. It also would not predict the type of frequency effects demonstrated in the current study.

Just as previous cross-linguistic studies (Bates, MacWhinney, Caselli, Devescovi, Natale & Venza, 1984; Kail, 1989; Linder, 2003; Slobin & Bever, 1982) have been essential to establish which grammatical cues are comprehended earlier or later, it will be necessary to test other languages to properly assess whether a lack of structural similarity between constructions hinders the generalization of word order schemas. Contrasting object expression in French with other languages that use word order to mark agent–patient relations but have different phonological and structural characteristics is therefore a key task for future research.

**How might the language children hear explain the current results?**

A potential problem with the current structural similarity hypothesis was that French children simply might not hear objects used as often as English children. In this case, they may have assumed it unnecessary to express the object in their descriptions of the experimental videos. A comparison of French and English CDS gave some weight to this argument. The analysis suggested that in contexts where the object of the verbs *pousser/to push* and *tirer/to pull* (used transitively) is contextually given, French speakers might not express it verbally whereas English speakers appear more likely to do so with a pronoun (most frequently *it*). However, a distinction needs to be drawn between which constructions children are most likely to hear and which constructions adults would find most acceptable for a given context. The frequency of SV constructions in French CDS does not imply that
French adults would have found it acceptable to describe the video with SV responses. Indeed, we contend that they would not. In this case, delayed object use might be due to a combination of factors, including a lack of structural similarity, the phonological properties of clitics, the relative frequency of objects in the input and the subsequent need to figure out the contexts in which object expression is obligatory. The last two factors underline how crucial it is to perform corpus-based research in tandem with experimental studies and to understand the pragmatics of the languages under study. Whilst descriptively languages might appear to have similar constructions available, in practice these constructions might get put to work quite differently. Clearly, then, the pragmatics or information structure of the language affects what children are most likely to hear and the high frequency constructions that they will base their early grammatical development on.

A better understanding of the pragmatics of French might also help to resolve a final question concerning the copiousness of dislocations in child French (see Clark, 1985; Hickmann & Hendriks, 1999; Parisse, 2004, for further observations of this). Although a common feature of adult spoken French, dislocated subjects were unexpectedly abundant in the French children’s responses. It is possible that children are slowly getting to grips with the differing functions of clitics and dislocated NPs in French discourse, initially depending on the two forms to perform the separate functions of naming and relating the referent to the verb. Adults might be more likely to combine these roles in a single lexical subject or introduce the subject with more sophisticated discourse technique (cf Lambrecht, 1987, 1994), whereas children might tend to systematically produce a clitic before the verb even when it is redundant (Parisse, 2004).

REFERENCES


FRENCH WORD ORDER


APPENDIX A

FRENCH PERSONAL PRONOUNS

A summary of French personal pronouns is given in Table 5 (adapted from Price, 1993). Disjunctive pronouns are given here only for completeness. They are used mainly when there are two or more coordinate subjects (*Lui et moi nous partons demain*; ‘He and I (we) are leaving tomorrow.’) and for emphasis (*Il ose m’accuser, moi!* ‘He dares accuse ME!’).

French also uses the adverbial clitics *y* and *en* as well as the reflexive clitics *se* and *soi*. Clitic pronouns are always ordered immediately before the verb, with the exception of imperative constructions, where the object clitic follows the verb, for example, *prends-le!* ‘take it!’). The relative ordering of direct and indirect pronouns can be complicated, albeit consistent. However, the third person singular subject clitics *il* and *elle* and the direct object clitics *le* and *la* are always ordered immediately before the verb, the subject always preceding the object.
### APPENDIX B

**STIMULI PRESENTED IN THE HIGH FREQUENCY, SOV CONDITION, ORDER 1**

Responses were elicited from the child with video clips 4, 6, 8, 10 and 12 for each verb. This is indicted with the question *Qu’est ce qui se passe?* ‘What’s happening?’

#### TABLE 5. French personal pronouns

<table>
<thead>
<tr>
<th>Conjunctive pronouns (clitics)</th>
<th>Direct object</th>
<th>Indirect object</th>
<th>Disjunctive pronouns</th>
</tr>
</thead>
<tbody>
<tr>
<td>je (I)</td>
<td>me (me)</td>
<td>me (to me)</td>
<td>moi (I, me)</td>
</tr>
<tr>
<td>tu (you)</td>
<td>te (you)</td>
<td>te (to you)</td>
<td>toi (you)</td>
</tr>
<tr>
<td>il (he, it masc.)</td>
<td>le (him, it masc.)</td>
<td>lui (to him/it)</td>
<td>lui (he, him)</td>
</tr>
<tr>
<td>elle (she, it fem.)</td>
<td>la (her, it fem.)</td>
<td>lui (to her/it)</td>
<td>elle (she, her)</td>
</tr>
<tr>
<td>nous (we)</td>
<td>nous (us)</td>
<td>nous (to us)</td>
<td>nous (we, us)</td>
</tr>
<tr>
<td>vous (you)</td>
<td>vous (you)</td>
<td>vous (to you)</td>
<td>vous (you)</td>
</tr>
<tr>
<td>ils (they masc.)</td>
<td>les (them)</td>
<td>leur (to them)</td>
<td>eux (they, them masc.)</td>
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<tr>
<td>elles (they fem.)</td>
<td>les (them)</td>
<td>leur (to them)</td>
<td>elles (they, them fem.)</td>
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</table>

**MATTHEWS ET AL.**

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**VERB/CLIP no.**  **Script for experimenter**  **Video**

**Pousser**

1. Renard Phoque pousse  
   Fox pushing a seal
2. Eléphant Canard pousse  
   Elephant pushing a duck
3. Girafe Éléphant pousse  
   Giraffe pushing an elephant
4. *Qu’est ce qui se passe?*  
   Duck pushing a fox
5. Phoque Canard pousse  
   Seal pushing a duck
6. *Qu’est ce qui se passe?*  
   Bear pushing a giraffe

**Embrasser**

1. Canard Ours embrasse  
   Duck kissing and hugging a bear
2. Phoque Canard embrasse  
   Seal kissing and hugging a duck
3. Renard Girafe embrasse  
   Fox kissing and hugging a giraffe
4. *Qu’est ce qui se passe?*  
   Bear kissing and hugging a duck
5. Ours Girafe embrasse  
   Bear kissing and hugging a giraffe
6. *Qu’est ce qui se passe?*  
   Fox kissing and hugging an elephant

**Tirer**

1. Renard Ours tire  
   Fox pulling a bear
2. Girafe Phoque tire  
   Giraffe pulling a seal
3. Phoque Éléphant tire  
   Seal pulling an elephant
4. *Qu’est ce qui se passe?*  
   Duck pulling a bear
5. Éléphant Girafe tire  
   Elephant pulling a giraffe
6. *Qu’est ce qui se passe?*  
   Fox pulling a duck
<table>
<thead>
<tr>
<th>Verb/Clip no.</th>
<th>Script for experimenter</th>
<th>Video</th>
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<tbody>
<tr>
<td>Frapper</td>
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<td>1</td>
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<tr>
<td>2</td>
<td>Girafe Éléphant frappe</td>
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