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SECOND LANGUAGE LEARNERS’ KNOWLEDGE OF ENGLISH LOCATIVE VERBS: SOME IMPLICATIONS FOR TEACHING*

ABSTRACT: This paper argues for teaching verbs in a way that focuses on the complex relationship between verb meaning and syntax. It has been shown that the five classes of verbs typified by pour, fill, spray, butter and bag differ in the syntactic patterns that they are permitted to occur in, and that these syntactic differences can be attributed to subtle differences of meaning. My study shows that these differences in meaning and syntactic patterns may not be immediately obvious to second/foreign language learners, however. The constraints on syntax that are driven by verb meaning are gradually discovered from the language input. Learners at even the intermediate and advanced levels have problems with this area of grammar. I suggest that in the teaching of such verbs, attention needs to be drawn to meaning-syntax correspondences.

KEYWORDS: Figure, Ground, locative alternation, analytic-conflated alternation, learners of English as a second/foreign language, positive evidence, negative evidence

0. VERB MEANING AND SYNTAX

It is now widely accepted (Pinker 1989; Gleitman 1990; Levin 2003) that there are systematic correspondences between verb meaning and syntax, and that the knowledge of these correspondences may play a central role in the acquisition of grammar. I look at the acquisition of five classes of verbs that show a Figure-Ground relationship.

0.1 Locative alternation

The first three classes are ‘verbs of putting’ with the meaning “put something somewhere.” Let us consider in turn verbs of the spray-, pour-, and fill- classes. Spray-class verbs participate in the so-called

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locative alternation, illustrated in (1) below.

(1) a. John sprayed insecticide onto the tree.
        b. John sprayed the tree with insecticide.

In these sentences, insecticide is the entity which changes its location, and is the Figure. The tree is the Ground, the stable frame against which the Figure moves. Verbs like spray appear in two syntactic structures: either the Figure or the Ground may be realized as direct object.

Although (1a) and (1b) appear to be near-paraphrases, there are some differences in meaning between them. In (1a) the focus is on the movement of the Figure (insecticide) which is the direct object of the sentence; in (1b) the focus is on the change of state of the Ground (the tree) which is here the direct object. The verb spray therefore alternates between a movement reading and a change of state reading by choosing the Figure or the Ground as direct object. Other verbs of the spray-class are spread, sprinkle, smear, splash, load, heap, pack, pile, stuff, stack, dab, drape, shower, rub, and wrap.

Spray-class verbs differ from pour- and fill-class verbs, which allow respectively Figure and Ground as internal arguments, but do not participate in the locative alternation. Example (2) shows that the pour-class allows only the Figure as direct object; (3) shows the fill-class allows only the Ground as direct object.

(2) a. John poured water into the glass.
        b.*John poured the glass with water.

(3) a. John filled the glass with water.
        b.*John filled water into the glass.

Other pour-class verbs are put, dribble, drip, spill, slop, dip, funnel, push, shovel, siphon, and drop. Other fill-class verbs are blanket, cover, cloak, decorate, encircle, flood, garland, infect, mask, pad, robe, stain, surround, swaddle, and wreathe.

0.2 Holistic and partitive readings
It has been noted that it is always the argument that is realized as a direct object which is interpreted as wholly affected by the action of the verb
(Rappaport & Levin 1988; Tenny 1994). A ‘holistic’ reading of the insecticide is possible in (4a), a ‘partitive’ reading is not (4b). The tree can however get a partitive reading (4c).

(4) a. John sprayed the insecticide onto the tree (there is no insecticide left).
    b. ?? John sprayed the insecticide onto the tree (there is half a can of insecticide left over).
    c. John sprayed the insecticide onto the tree (the tree is only half covered).

In contrast, a holistic reading of the tree is possible in (5a), a ‘partitive’ reading is not (5b); (5c) shows that insecticide can have a partitive reading when it is not the direct object.

(5) a. John sprayed the tree with insecticide (the tree is completely covered with insecticide).
    b. ?? John sprayed the tree with insecticide (the tree is only half covered).
    c. John sprayed the tree with insecticide (there is half a can of insecticide left over).

0.3 Denominal verbs

The fourth and fifth classes of verbs in this study are denominal verbs like butter and bag which have attracted attention because of their parallelism with locative alternation verbs (Clark & Clark 1979; Jackendoff 1990; Hale & Keyser 2003 among others). In (6a) butter occurs as the Figure and the toast is the Ground. In (6b), however, the meaning of the Figure gets conflated in the verb, and the Ground argument is realized as direct object. (6b) is thus like (1b) in realizing the Ground as direct object.

(6) a. He spread butter on the toast.
    b. He buttered the toast.

I shall refer to the structure in (6a) as ‘analytic’ and that in (6b) as ‘conflated.’ Other butter-class verbs are bandage, bar, bell, blindfold, clothe, curtain, dress, fund, gas, grease, harness, hook, house, ink, paint, paper, powder, seed, shoe, spice, water, and word.
On the other hand, the bag-class conflates the meaning of Ground into the verb, and realizes a Figure argument as direct object; cf (7a-b). (7b) is like (1a) in realizing the Figure as direct object. Again, I shall refer to (7a) as ‘analytic’ and (7b) as ‘conflated.’

(7) a. He put the apples in a bag.
   b. He bagged the apples.

Other bag-class verbs in English are: bank, can, corral, crate, jail, kennel, package, pen, photograph, pot, pocket, ship (the oars), and floor (the opponent).

The parallelism between denominal verbs and spray-class verbs, it can be argued, also extends to direct objects of denominal verbs getting a holistic reading. Therefore, the toast in (8a) gets a holistic reading, and not a partitive reading (8b).

(8) a. He buttered the toast (the toast is completely covered).
   b. ?? He buttered the toast (the toast is only half covered).

Similarly, in (9a) the apples get a holistic reading, and a partitive reading is not possible (9b).

(9) a. He bagged the apples (there are no apples left).
   b. ?? He bagged the apples (there are still some apples left).

1. THE STUDY

In order to investigate the acquisition of the locative and the analytic-conflated alternations, a small-scale study was conducted on second language learners of English. Specifically, the study sought to address the following questions:

- Do second language learners know which verb classes (spray-, pour- and fill-) participate in the locative alternation?
- Do second language learners know that butter- and bag-class verbs participate in analytic-conflated alternation?
1.1 Subjects
Twenty-two non-native speakers of English enrolled in a three-month intensive English language course for foreign (non-Indian) nationals at the Central Institute of English and Foreign Languages, Hyderabad, participated in this study. They had been placed in the advanced group on the basis of a test conducted by the University. These students were all employed in the Ministries of their respective countries,¹ and therefore their general learning ability, IQ etc. can be assumed to be comparable.

1.2 Task
The task was a grammaticality judgment task consisting of 15 pairs of sentences instantiating (i) the locative alternation (cf. (1) above) or (ii) the analytic-confounded alternation (cf. (6-7) above), (see Appendix 1b). The five verb classes discussed above were represented by three verbs each.²

(10) spray-class: spray, load, pack
    pour-class: pour, spill, nail
    fill-class: cover, block, decorate
    butter-class: butter, salt, saddle
    bag-class: bag, bottle, shelve

Spray-class verbs participate in the locative alternation, pour- and fill-class verbs do not. The denominal verbs of the butter- or bag- classes show conflation of the Figure or the Ground into the verb. Thus when given pairs of sentences, with either the Figure or the Ground appearing as direct object, the expected pattern of grammaticality judgments is as indicated in the Table 1 (an asterisk * indicates ungrammaticality).

¹Namely, - Chile, Eritrea, Estonia, Iraq, Kazakhastan, Mongolia, Namibia, Palestine, Russia, Sudan, Thailand, Togo, Ukraine, Uzbekistan, Venezuela, and Vietnam.
²The verbs/nouns in the task were carefully chosen from a larger set of 25 after ascertaining that the subjects in the study were familiar with them. Subjects were asked to indicate for each word whether they had (n)ever heard it, and whether they knew its meaning. Only words that had a positive response for both these questions from all students were included in the task. 8 words—vomit, stain, splash, grease, bandage, cage, case and package—were excluded as they were unfamiliar to 3-10 subjects.
Table 1: Sentence types used in the study

<table>
<thead>
<tr>
<th></th>
<th>Figure as direct object</th>
<th>Ground as direct object</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>spray</em></td>
<td>*John sprayed the insecticide onto the tree.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>John sprayed the tree with insecticide.</td>
</tr>
<tr>
<td>2.</td>
<td><em>pour</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>John poured water into the glass.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*John poured the glass with water.</td>
</tr>
<tr>
<td>3.</td>
<td><em>fill</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>*Grace filled water into the glass.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grace filled the glass with water.</td>
</tr>
</tbody>
</table>

For the denominal verbs, both analytic and conflated structures are possible.

<table>
<thead>
<tr>
<th></th>
<th>Analytic</th>
<th>Conflated</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td><em>butter</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jean spread butter on her toast.</td>
<td>She normally doesn't butter her toast.</td>
</tr>
<tr>
<td>5.</td>
<td><em>bag</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mary put the apples in the bag.</td>
<td>Mary bagged the apples.</td>
</tr>
</tbody>
</table>

The 30 sentences were randomized in presentation. Since judgments on semantics-syntax correspondences are often quite subtle, learners were asked to indicate whether a particular sentence was a possible sentence in English, or not, on a 5-point scale (+2 = completely possible, +1 = fairly possible, 0 = unable to decide, -1 = fairly impossible and -2 = completely impossible).³

2. RESULTS AND DISCUSSION

We first report the findings of the *spray-*-, *pour-*-, and *fill-*classes and then the *butter-* and *bag-*classes.

³ Prior to the administration of the grammaticality judgment task, it was found that learners needed training on the use of this scale. They were therefore trained with two words: *fill and paint.*
2.1 *Spray-, pour-, and fill*-class verbs

From Table 2, we can see that the acceptance or rejection of verbs in the locative alternation occurs in the right direction. That is, positive and negative scores occur where they ideally should. Subjects judge as possible, sentences with either Figure or Ground as direct objects with *spray*-class verbs. They judge as possible for *pour*-class, sentences with Figure as direct object; but as impossible, sentences with Ground as direct object. They judge as possible for *fill*-class, sentences with Ground as object; as impossible, sentences with Figure as object.

<table>
<thead>
<tr>
<th></th>
<th>Figure as direct object</th>
<th>Ground as direct object</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expected perfect score</td>
<td>Mean score</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expected perfect score</td>
</tr>
<tr>
<td><em>spray</em>-class</td>
<td>+2</td>
<td>+1.46</td>
</tr>
<tr>
<td><em>pour</em>-class</td>
<td>+2</td>
<td>+1.71</td>
</tr>
<tr>
<td><em>fill</em>-class</td>
<td>-2</td>
<td>-1.2</td>
</tr>
</tbody>
</table>

A second interesting point is that learners’ mean scores are higher for acceptance than for rejection. This is evident when we compare the strength of the acceptance of grammatical sentences in *pour*- and *fill*-class verbs (+1.71 and +1.61 respectively) with the strength of rejection of ungrammatical sentences (-1.38 and -1.2 respectively). The difference is statistically significant (F(1,114) = 552 p<0.001 for *pour*-class, F(1,114) = 286 p<0.001 for *fill*-class)). It appears that when learners encounter a structure that is not in their repertoire, they are uncertain whether this is due to a gap in their own linguistic knowledge, or due to a systematic absence of that construction in the target language. This is because of the absence of negative evidence, i.e., information to the learner that a certain target utterance is ungrammatical does not occur in language input in natural situations.

A third point that emerges from our data is that learners’ knowledge of individual verbs in the three classes is variable.
Let us first look at the alternating verbs – *spray*, *load*, and *pack*. Although these verbs can take either Figure or Ground as direct object, they often show an orientation towards one of these (Pinker 1989:124-130). *Spray* is a Figure-oriented verb and therefore takes Figure as object more naturally than Ground. That is, *spray insecticide* is more natural than *spray the tree*. Interestingly, learners share this perception. Their acceptance score for *spray* with Figure object is +1.7, whereas with Ground object it is +0.95. On the other hand, *load* is a Ground-oriented verb (*load the truck* is more natural than *load the apples*) and is perceived as such (compare the means +1.8 and +0.95 for Ground and Figure objects respectively). However, in the case of *pack*, the natural orientation of the verb is not evident to learners. *Pack* is a Ground-oriented verb but is perceived as being Figure-oriented (compare the means +1.75 and +0.8 for Figure and Ground objects).

<table>
<thead>
<tr>
<th>Verb class</th>
<th>Figure as direct object</th>
<th>Ground as direct object</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>spray</em>-class</td>
<td><em>spray</em></td>
<td>1.7 (0.47)</td>
</tr>
<tr>
<td></td>
<td><em>load</em></td>
<td>0.95 (1.31)</td>
</tr>
<tr>
<td></td>
<td><em>pack</em></td>
<td>1.75 (0.78)</td>
</tr>
<tr>
<td><em>pour</em>-class</td>
<td><em>pour</em></td>
<td>1.95 (0.22)</td>
</tr>
<tr>
<td></td>
<td><em>spill</em></td>
<td>1.6 (0.50)</td>
</tr>
<tr>
<td></td>
<td><em>nail</em></td>
<td>1.55 (0.51)</td>
</tr>
<tr>
<td><em>fill</em>-class</td>
<td><em>cover</em></td>
<td>-1.15 (0.87)</td>
</tr>
<tr>
<td></td>
<td><em>block</em></td>
<td>-1.35 (0.87)</td>
</tr>
<tr>
<td></td>
<td><em>decorate</em></td>
<td>-1.1 (1.20)</td>
</tr>
</tbody>
</table>
In the *pour*-class, the strengths of acceptance and rejection for the verb *pour* are higher than for the verbs *spill* and *nail*. *Pour* shows near-native learning: learner acceptance of Figure objects with *pour* has a mean of +1.95, and rejection of Ground objects, a mean of -1.9.

It appears that learners are uncertain about assigning particular verbs to one of the three classes – *spray*-, *pour*- and *fill*-. Which class a verb falls into may be largely language-specific and this may take time to acquire due to the need for positive input (Pinker 1989). Kim (1999) surveyed 13 languages and found that the lexical mapping of movement reading to Figure as direct object is universal. Such verbs never allowed the Ground to occur as direct object. In first language acquisition as well, children do not make over-extension errors in *pour*-class verbs (e.g., E,7;2: *My belly holds water! Look, Mom, I'm gonna pour it with water: my belly*. Bowerman 1982, as cited in Pinker 1989:26). On the other hand, verbs which allow Ground as object may also allow Figure as object. Thus, children often over-extend Figure objects to *fill*-class verbs (e.g., E, 5;0: *Can I fill some salt into the bear?* Bowerman 1982, as cited in Pinker 1989:26). Cross-linguistically as well, we find that the Hindi counterparts to the English verbs *fill* or *decorate*, i.e., *bhar* or *sajaana*, allow Figure objects in addition to Ground objects.

(10) a. tub mein paani bharaa
     tub in water fill pst.
     ‘filled water in the tub’ (ungrammatical in English)

    b. tub (ko) paani se bharaa
       tub acc water with fill pst.
       ‘filled the tub with water’

(11) a. ghar mein phool sajaana
     house in flower decorate pst.
     ‘decorate flowers in the house’ (ungrammatical in English)

    b. ghar (ko) phoolon se sajaana
       house acc flowers with decorate pst.
       ‘decorate the house with flowers’
2.2 Butter- and bag-class verbs

Recall that for each of the butter- and bag-class verbs, two sentence frames were given – one, an analytic variety (Jean spread butter on her toast) and the other, a conflated variety (She normally doesn't butter her toast). Learner acceptance or rejection of these frames is given below in Table 4.

Table 4: Mean score and Standard deviation standard deviation of learner judgment of butter- and bag-class verbs

<table>
<thead>
<tr>
<th>Verb class</th>
<th>Analytic variety</th>
<th>Conflated variety</th>
</tr>
</thead>
<tbody>
<tr>
<td>butter-class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>butter</td>
<td>+1.95 (0.22)</td>
<td>+0.75 (1.48)</td>
</tr>
<tr>
<td>salt</td>
<td>+1.6 (0.99)</td>
<td>+0.4 (1.72)</td>
</tr>
<tr>
<td>saddle</td>
<td>+1.55 (0.60)</td>
<td>+1.05 (1.27)</td>
</tr>
<tr>
<td>bag-class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bag</td>
<td>+1.95 (0.22)</td>
<td>+0.95 (1.31)</td>
</tr>
<tr>
<td>bottle</td>
<td>+1.95 (0.22)</td>
<td>+1.25 (1.16)</td>
</tr>
<tr>
<td>shelf</td>
<td>+1.8 (0.41)</td>
<td>-0.5 (1.73)</td>
</tr>
</tbody>
</table>

The analytic variety shows a greater degree of acceptance than the conflated variety in both butter- and bag-class verbs, the difference in the degree of acceptance being statistically significant (F(1,114) = 18.5 p<0.0001 for butter-class and F(1,114) = 20.5 p<0.0001 for bag-class). Learners clearly prefer the sentence with the noun butter (He spread butter on the toast) to the conflated verb (He buttered the toast).4

4 In informal conversations with learners after the task mentioned in note 2, some learners indicated that they knew phrases such as ‘bottled water’ and ‘salted meat’ but did not know that bottle and salt could be used as verbs in English.
A quick comparison between the two types of alternation shows that learners seem to have a weaker knowledge of the analytic-conflated alternation than of the locative alternation. Learning new verbs that result from argument conflation, it appears, may be more difficult than learning argument structure alternation.

There is a great deal of difference in the responses to different verbs. In the butter-class, the conflated verb saddle (M=+1.05) is seen as more acceptable than butter (+0.75) and salt (+0.4). In the bag-class, the conflated verb bottle seems to be more acceptable (+1.25) than bag (+0.95). The verb shelve is rejected as ungrammatical (-0.5).

3. SUMMING UP

The findings on locative alternation show that learners know spray-class verbs participate in the alternation and pour- and fill-class do not. Therefore, they accept Ground and Figure objects in spray-class, accept only Figure objects in pour-class and accept only Ground objects in fill-class. They consistently reject Ground objects with pour-class and Figure objects with fill-class. Secondly, learners are relatively less efficient in rejecting ungrammatical sentences than accepting grammatical sentences in pour- and fill-classes. The third finding is that learners are uncertain about assigning particular verbs to one of the three verb classes. This shows that they may take time to fix subclass membership of verb classes.

With regard to the analytic-conflated alternation (butter- and bag-class), learners seem to prefer the analytic variety where the Figure or the Ground occurs as noun, to the conflated variety where the Figure or the Ground is incorporated into the verb.

4. LEARNABILITY ISSUES

The knowledge of the locative alternation – that spray-class verbs allow Figure or Ground objects, and pour-class verbs Figure objects and fill-class verbs Ground objects – can be gained easily from positive evidence.
So also is the case with analytic-conflated alternation in butter- and bag-class verbs. The only difference between learning locative alternation and analytic-conflated alternation is the frequency of these structures in the input. The former is frequent and available in most languages, while the latter, it appears, is present in fewer languages.

The more interesting issue is how second language learners get to know that pour-class does not allow Ground objects, and fill-class does not allow Figure objects. To know this, would learners require some form of negative evidence? An issue currently being debated in second language acquisition research is whether L2 acquisition proceeds entirely on the basis of positive evidence (Trahey 1996), as has been argued for L1 acquisition (see Pinker 1989), or whether negative evidence (i.e., information to the learner that his or her utterance is ungrammatical) would also be required (White 1991). Negative evidence such as explanations, explicit grammar teaching, and correction of wrong sequences or ungrammatical sentences actually show to the learners what is not possible in the target language and what may not be done (Spada & Lightbown 2002; Mackey, Gass, & McDonough 2000). I leave this question open.

5. IMPLICATIONS FOR THE TEACHING OF VERBS

Though semantic-syntactic correspondences have been widely researched in acquisition studies and have resulted in different learnability theories, they have not adequately informed second language pedagogy. In second language teaching, grammar and vocabulary are usually taught independently of each other. Attempts to merge grammar and vocabulary teaching through lexical approaches (Hunston & Francis 2000, Lewis 1993) have not caught on.

Overt teaching of semantic-syntax correspondences may be counterproductive and may in fact encourage an over-application of the rule. But some kind of learning-focused activity could be designed that incidentally assist learners to focus their attention on such correspondences. That is, in performing a task, learners are forced to
employ some feature that has been specifically targeted (White 1987). In Exercise A below, a common exercise type where a that -clause is the object of teaching/learning, the attempt is to form a semantically coherent class which shows this argument structure. This kind of teaching is largely implicit, and it is expected that the semantics-syntax mapping will be unconsciously picked up.

Exercise A

Complete the sentences below. You may use the ideas given in the box, if you like.

My teacher is convinced…
It is clear …
I am positive…
I am definite…
She is sure …
My friends are confident …
There is no doubt

she is innocent
the boy was lying
the chief guest was wearing a pair of red socks
I will win the school elections this year
this is the right answer
it will rain tonight

The instructional materials could also build tasks and exercises on marked features of verbs and verb classes, particularly those that second language acquisition research has shown to be difficult. Exercise B builds on the fact that the conflation of an instrument/tool as a verb is specific to English and is rare in other languages. In this case, unless attention is drawn to this kind of conflation, it may escape the notice of the learners. A conscious teaching of this conflation might be useful, though it may lead to some overgeneralization. This is worth a risk, because overgeneralization errors, as we know, get unlearnt with increasing proficiency, and input.

Exercise B

Rewrite the sentences, using the underlined tools as verbs.

1. The man hit the horse with a whip.
2. The boy removed the dry leaves with a rake.
3. He fixed the sign on the tree with a nail.
4. The hunter cut the tree in half with a saw.
5. Can you push the nail into the box with a hammer?
6. They made holes in the box with a drill.
Knowledge of such semantics-syntax correspondences might be useful for teachers as well to understand errors. They need to be aware that errors do not occur in isolation and are not random. Frequency in the input can be enhanced by saliency provided by instructors and materials. If grammar and vocabulary instruction in L2 curricula are combined, with a special focus on semantically coherent verb classes, many idiosyncrasies of verb syntax can be explained and sorted out.

REFERENCES


APPENDIX 1a

*Verbs used in the verb meaning test:*

pour, spill, nail, vomit, fill, cover, block, decorate, package, stain, load, 
spray, pack, paint, splash, bottle, bag, shelve, cage, case, butter, salt, saddle, 
bandage, grease

APPENDIX 1b

*Sentences given in the Grammaticality Judgment task.*

John poured the water into the glass. 
John spilled the soup onto the floor. 
Sally nailed the notice onto the wall. 
Peter covered the bed with blanket. 
The farmer blocked the road with the tractor. 
The children decorated the tree with lights. 
John loaded the apples onto the truck. 
Sam packed the clothes into the suitcase. 
The farmers sprayed the insecticide on the trees. 
John put the honey in the bottle. 
Mary put the apples in the bag. 
Tom put the books on the shelf. 
Jean put butter on her toast. 
Mynah put some more salt in her soup. 
The man put a saddle on the horse.

John poured the glass with water. 
Sam spilled the floor with soup. 
John nailed the wall with the notice. 
John covered the blanket onto the bed. 
The farmer blocked the tractor into the road. 
The children decorated the lights onto the tree. 
Sam loaded the truck with apples. 
Anne packed the suitcase with clothes. 
The farmer sprayed the trees with insecticide. 
Jane bottled the home-made wine. 
Mary bagged the apples. 
Tom shelved the books. 
She normally doesn't butter her toast. 
Before you salt the meat, wash it. 
The man saddled the horse.