

A Frame-Based Mechanism for Syntactic Flexibility

To enable communication, linguistic expressions must have syntactic descriptions that are both structured and flexible. Ferreira and Humphreys (2001) illustrated the flexible production of syntactic structure by investigating stem-exchange errors. Speakers heard word pairs like 'tape...REcord' (with 'REcord' having first syllable stress, indicated by capitalization) and were asked to formulate phrases like 'taped the REcord.' When a stress-shifting noun, like "REcord", exchanged with a verb, it was produced with verbal stress (i.e., "reCORDeD the tape"). This shows that speakers produce nouns as verbs in stem exchange errors; however, it does not show how language-production mechanisms accomplish this syntactic conversion. The present experiments explore two general possibilities.

According to lexically based models of sentence production (Levelt, 1989; F. Ferreira, 2000), speakers select syntactically defined words, which when combined, determine an utterance's syntactic structure. The well-formed stem-exchange error is caused by erroneously selecting an intended noun's verbal form. In contrast, according to frame-based accounts (Garrett, 1975), speakers begin with lexically independent syntactic frames into which syntactically compatible lexical representations are slotted. When a to-be-produced noun mismatches a verb slot, speakers accommodate by selecting the syntactically appropriate (verbal) form of the noun, presumably through a morphological conversion process. Two experiments tested these possibilities.

In Experiment 1, speakers heard nouns ("tape ... REcord") and produced them in frames that contained phonologically realized morphological inflections ("tapes the record") or in morphologically bare frames ("tape the record"). According to one kind of frame-based model, the phonology of inflections may select syntactically compatible forms. If so, then errors in frames that include phonologically realized inflections like "records the tape" should be produced as verbs more often than errors in bare frames like "record the tape". The results showed equal numbers of stress shifts with both kinds of frames. Thus, it appears as if phonologically realized inflections do not cause the use of syntactically compatible lexical forms. This is consistent with an abstract (phonologically independent) frame-based account, or with a lexically based account.

Experiment 2 distinguished these. This time, speakers produced nouns in bare frames that were either syntactically defined ("tape the REcord") or syntactically undefined ("tape and record"). A lexically based account predicts no effect of frame, whereas a frame-based account predicts more shifts with a syntactically defined frame because the open syntactic slot will determine word form selection. The results revealed more stress shifts with syntactically defined frames. This shows that speakers produce grammatical sentences by representing an abstract and phonologically independent syntactic frame, which guides the selection of lexical items for production.

References:

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- Garrett, M.F. (1975). The analysis of sentence production. In Bower, G.H. (Ed.), *The Psychology of Learning and Motivation* (Volume 9, pp. 133-177). New York: Academic Press.
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	Iambs per subject			
	Experiment 1		Experiment 2	
	“ <u>the</u> ”	“ <u>(e)s the</u> ”	“ <u>the</u> ”	“ <u>and</u> ”
Stress-shifting words	0.37	0.31	0.29	0.06
Non-shifting words	0.00	0.02	0.04	0.02