

## Producing Dispreferred Structures

Grammatical constraints restrict the structures speakers can use to convey their message. But grammar also provides speakers with flexibility. When speakers can choose how to structure their utterance (e.g. when choosing between a double object, DO, or prepositional dative, PD), they *on average* produce those utterances faster and with fewer errors than when there is only one permissible alternative (Ferreira, 1996). However, even though multiple alternatives may in theory be acceptable, often one of them will be more likely than others. Because production is incremental (speakers do not plan their entire utterance before they start talking), speakers may run into trouble when less preferred structures are chosen.

To test this hypothesis, we used a new methodology which elicits particular ditransitive structures more reliably than previous studies. Using Poser software, we created computer-animated videos, which reliably elicited ditransitive structures (90% usable data vs. 40-50% in prior studies) and even distinguished between verbs with subtle meaning differences (e.g. *give* vs. *hand*). A variety of verb biases for PD structures were reliably reflected in the data (Table 1). We also successfully manipulated the complexity of the theme and recipient by eliciting contrasts on neither, either, or both (Table 2). Complexity of the recipient and the theme in turn affected syntactic structure (Table 3), as predicted by availability-based production (Bock & Warren, 1985; Ferreira & Dell, 2000).

If speakers can take advantage of the flexibility afforded by alternating verbs, then they should be successful even when the structure preferred by the contrast is different from that preferred by the verb. Nonetheless, we found that contrast on the theme and contrast on the recipient had differential effects on fluency. Speakers were less fluent when there was contrast on the theme (preferring a DO structure, in contrast to the PP bias of the verbs), in comparison with contrast on the recipient (preferring a PP structure, consistent with the PP bias of the verbs). Moreover, the presence of contrast on the theme interacted with verb bias such that the more a particular verb preferred the prepositional structure, the greater the effect of contrast on the theme on fluency. This suggests that speakers may experience difficulty when factors affecting choice of syntactic structure suggest differing alternatives.

We also investigated how preference affected production difficulty given that a particular structure was chosen. For each combination of factors (verb, theme contrast, recipient contrast), we calculated the probability of a PD or DO using our entire dataset. We then tested whether this measure of a structure's predictability (PD-bias or DO-bias, given the verb, and the theme and recipient complexity) relates to speakers' fluency when producing that structure. We found that speakers are more disfluent when they produce dispreferred structures. This suggests even when dispreferred structures are chosen, they are hard to produce (see also Tily et al., 2007).

In conclusion, having a choice per se does not guarantee more successful production. Instead, production is facilitated when all factors prefer the same alternative, and when speakers choose this preferred alternative.

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**Table 1: Observed prepositional dative (PD) bias of verbs in our experiment**

<i>give</i>	<i>hand</i>	<i>offer</i>	<i>show</i>	<i>take</i>	<i>throw</i>	<i>toss</i>
.60	.60	.53	.57	.93	.84	.78

**Table 2: Contrasts in videos (rows) and successfully elicited complex expressions (columns)**

Video \ Utterance:	None	Recipient-only	Theme-only	Both
None	<b>49%</b>	19%	11%	21%
Recipient-only	21%	<b>62%</b>	2%	15%
Theme-only	7%	7%	<b>58%</b>	27%
Both	13%	14%	17%	<b>56%</b>
<b>Total</b>	21%	26%	22%	30%

**Table 3: Observed prepositional dative (PD) bias for varying contrast**

No contrast: *Simon showed [a hat] [to the girl]*. (72% PD)

Recipient contrast: *Simon showed [a hat] [to the girl with the striped shirt]*. (84% PD)

Theme contrast: *Simon showed [the girl] [a hat with a bow on it]*. (56% PD)

Both contrasts: *Simon showed [a hat with a bow on it] [to the girl with the striped shirt]*. (70% PD)