

Who plans to fail?

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Findings related to a wide range of phonetic and phonological patterns suggest that speech production planning, at least the earliest stages of it, unfolds in relatively large chunks—chunks that may be better defined in terms of phrase-level prosodic units than in terms of one-or-two-word sequences [1]. More recently, research in phonetics and psycholinguistics has begun to explore the extent to which planning might be *flexible* – i.e., the idea that the scope of speakers' planning of an upcoming utterance is sensitive to both external (e.g. speaking conditions) and internal (e.g. cognitive limitations) factors. This talk will discuss findings from a large-scale production study with American English speakers that bears on the role of a speaker-internal factor, namely working memory capacity (WMC), which has been implicated in planning scope at higher levels of grammatical structure (e.g., [2]).

I'll first summarize evidence from this data set for the importance of prosodic organization to speakers' planning of spoken utterances, which is understood to reflect phonological planning [3]. This evidence comes in the form of (a) speakers' preferred prosodic structuring of utterances of different length, and (b) the durations of silent pauses that precede different prosodic structures. Importantly, this evidence also implies flexible planning, as patterns related to both (a) and (b) are shown to vary systematically in relation to interindividual variation in WMC (as estimated by reading spans; [4],[5]). In particular, speakers with lower WMC tend towards assigning more structurally complex prosodic organization to utterances, while speakers with higher WMC tend towards simpler structures. I interpret this variation as supporting Krivokapić's [6]/[7] proposal that complex prosodic structures allow for more incremental planning than simple ones (Fig 1), which is what we would expect speakers with weaker planning resources (i.e., lower WMC) to favor.

The rest of the talk will be devoted to an additional hypothesis about WMC's role in planning scope, one that involves disfluent speech rather than the fluent prosodic structures assumed so far. In particular, I ask whether speakers with higher WMC, who, as described above, seem to engage in more extensive lookahead, show longer-range effects of upcoming disfluencies—i.e., earlier anticipation of a *failure* somewhere in the plan. Models of speech planning generally assume a mechanism for monitoring the plan for errors ([8]; for a recent review, see [9]), and overt disfluencies in speech represent errors that are detected (and at least partially addressed) by the production system. However, little is known about individual differences related to monitoring and detection, both of which are presumably dependent on the extensiveness of the plan's scope. I present data that bear on this issue and show that here, too, planning scope should be understood as flexible and significantly dependent on individual differences—in this case, individual differences related to WMC.

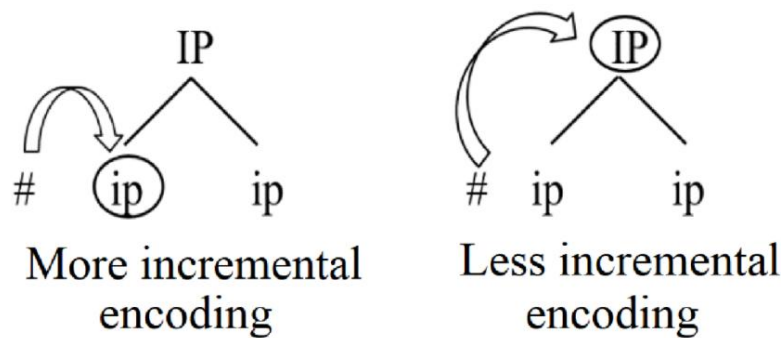


Fig 1. Flexible planning options in complex prosodic structures as proposed by Krivokapić (2012): Speakers can plan at lower nodes (and thus more incrementally) or at higher nodes (and thus less incrementally). Planning strategies will be reflected in preceding silent pause durations (indicated by ‘#’ in the figure). See also Krivokapić (2007).

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