Models of speech production typically assume speaking begins when message-level information is passed to linguistic encoding processes. An open question is the time-course of this coordination. Recently, Allum & Wheeldon (2007; 2009) proposed the functional phrase—FP—(e.g., a simple or conjoined NP) as the unit defining the scope of advanced planning. They found that when a sentence-initial FP (underlined) contained two nouns (the dog and the flower...), speech onsets were delayed compared to sentence-initial FPs that contained one noun (the dog above the flower...). However, speech onset delays are not necessarily the result of message-planning per se. An alternative proposal (Brown-Schmidt & Konopka, 2008) argues that message-planning scope can be as small as a single word. Examining gaze at unmentioned, but message-relevant entities, they exploited the timing of speakers’ first fixation to the “size-contrast” (e.g., a large butterfly when describing a smaller butterfly) to estimate when speakers first incorporated size-information into their message. They found that bilingual speakers fixated the size-contrast earlier when speaking English (e.g., the small butterfly), vs. Spanish (e.g., la mariposa pequeña), and interpreted this as evidence for lexically-incremental message-planning because a 1-word delay in adjective position afforded delayed planning of size-information in Spanish. However, these findings are consistent with Allum & Wheeldon’s proposal because the postnominal modifier is outside the first FP, on Allum & Wheeldon’s account.

The present research tests for incrementality within a FP. Eye-tracked participants (n=36) played an unscripted interactive task in which they described pairs of objects, one of which was presented with a size-contrasting item in the display, resulting in a size-adjective on the first or second noun (e.g., 1-2). Data were analyzed using mixed-models. Speakers produced significantly more scalar modifiers when they fixated the size-contrast, 88%, vs. when they did not, 25%, (p<.0001), validating the first-contrast fixation as a reasonable estimate of when speakers first incorporated size-information into their message. For fluent expressions, the timing of the first-contrast fixation, relative to utterance onset revealed that prenominal size-adjecitives in the first NP (NP1) were planned well before speech onset (1st fixation m=293ms before speech onset), whereas prenominal size-adjecitives in NP2 were planned after (1st fixation m=533ms after speech onset), p<.0001. Further, both phrase-initial disfluencies (e.g., 3-4) and size-repairs (e.g., 5-6) were associated with delayed first-contrast fixations for both NPs (p<.001), indicating disfluency was used throughout the utterance to incorporate late-planned message elements. Speech onsets revealed a consistent pattern: For fluent expressions, utterance onset was delayed when NP1 contained a size-modifier vs. when it was unmodified (p<.001); there was no delay when NP2 was modified (p=.56), further suggesting that only NP1 was planned before speaking.

Delayed planning of size-modifiers in NP2 suggests speakers planned less than a FP before speaking. Thus, the FP is unlikely to be the unit of advanced planning. Instead, speakers can plan minimal message elements before speaking, possibly as limited as what is needed to express a single lexical item. Disfluency facilitates this lexically-incremental message-level planning, suggesting a tight link between message-planning and linguistic encoding.
Examples
1. *The small duck and the lamp are flashing.*
2. *The duck and the small lamp are flashing.*
3. *Thee uh small duck and the lamp are flashing.*
4. *The duck and thee uh small lamp are flashing.*
5. *The duck uh small one and the lamp are flashing.*
6. *The duck and the lamp uh small lamp are flashing.*

References
