Individuals with agrammatic Broca's aphasia show deficits in comprehension of non-canonical wh-movement sentences (like object relatives: [1a]) and NP-movement sentences (like passives: [1b]). An issue of continuing controversy is whether this impairment arises because aphasic individuals process these sentences in qualitatively different ways from typical comprehenders, as under approaches in which aphasic individuals' syntactic representations for movement sentences are qualitatively different from unimpaired individuals' (Grodzinsky 1990, 2000, e.g.). Previous work using eyetracking has suggested that agrammatic individuals and controls show very similar patterns of automatic processing for wh-movement sentences (Dickey, Choy & Thompson, 2007). The current study replicates this finding for sentences with wh-movement (object relatives) and extends it to sentences with NP movement (passives).

Eight individuals with agrammatic aphasia and fourteen unimpaired controls listened to 48 brief stories like (1) and looked at computer displays. The displays depicted the agent (bride), theme (groom) and location (mall) of the story's principal action, as well as a distractor agent of a secondary event in the story (clerk). Each story was followed by a prompt telling them to point to one of the pictures on the screen. In experimental trials (n=24), the prompts had either object-relative (1a) or passive (1b) structures. Participants responded by using a mouse to click on one of the pictures on the screen.

Accuracy for both the wh-movement and NP-movement conditions was low for aphasic participants: 44% for object relatives and 25.8% for passives, neither one differing significantly from chance (both p>0.05, Sign test). However, eye-movement data revealed that aphasic and control participants had very similar fixation patterns for both passives and object relatives. For object relatives, both groups show a preference to fixate the agent when listening to the subject ("the bride"), which changes over to a preference to fixate the theme upon hearing the verb, which signals the trace ("was tickling [ ]"). This is visual evidence of gap-filling very similar to that reported for wh-questions for aphasic individuals (Dickey, et al., 2007) and young unimpaired listeners (Sussman & Sedivy, 2003). For passives, both groups showed a preference to fixate the theme at the position of the passive participle ("was tickled [ ]") followed by a preference the agent during the by-phrase ("by the bride"). The only reliable difference between agrammatic and control participants for either passives or object relatives was after sentence offset, when participants were preparing to respond to the comprehension probe.

These results suggest that both aphasic and unimpaired individuals exhibit on-line sensitivity to the unfolding structure of sentences with wh- and NP-movement. They also suggest that agrammatic individuals' automatic syntactic processing for such sentences may be intact: their eye-movements during sentence comprehension were similar to controls', only differing after sentence offset. These results are surprising if agrammatic individuals' grammatical representation and processing of movement sentences is qualitatively different from typical individuals' (cf. Grodzinsky, 1990, 2000). Instead, they suggest that agrammatic individuals may generate similar grammatical representations during comprehension, but that they are vulnerable to interference from alternative interpretations (Ferreira, 2003).

(1) One day, a bride and a groom were walking in a mall. The bride was feeling mischievous, so the bride tickled the groom. A clerk giggled at the scene.
   a. Point to who the bride was tickling [ ] at the mall.
   b. Point to who was tickled [ ] by the bride at the mall.