"On the one hand" as a Cue in the Comprehension of Discourse Structure

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Given evidence of anticipation within sentences (for upcoming sounds, words, and syntactic structures; Delong, et al. 2005; Kamide, et al., 2003; Levy, 2008), an open question is how comprehenders use cross-sentence cues to anticipate upcoming relationships between sentences. Within sentences, words combine via syntactic rules to determine what structures are possible. Between sentences, however, the resulting discourse structure is less constrained. Models of discourse coherence typically target relations that can be inferred to hold between pairs of propositions (Asher & Lascarides, 2003; Hobbs, 1979; Kehler 2002; Mann & Thompson, 1988; Prasad et al. 2008), with few hard constraints regarding the eventual structure of the discourse (cf. Roberts, 1996). Nevertheless there are cases in which the possible relations that could hold between a current sentence and a subsequent sentence are restricted. Existing work primarily targets local effects (e.g., verb-driven biases for the immediately upcoming sentence; Kehler et al., 2008; Staub & Clifton, 2006). Here we consider the contrast relation between sentences marked with *On the one hand* and *On the other hand*. Based on evidence of syntactic prediction (e.g., dependencies like *either…or*, Staub, 2006), our goal is to test whether comprehenders use *On the one hand* as a cue to anticipate upcoming discourse structure and furthermore how their processing of *On the other hand* is influenced by intervening material.

The expression *On the one hand* signals that a subsequent proposition will provide a contrast and will likely be marked with the expression *On the other hand*. The anticipation of a subsequent contrast can be satisfied immediately (e.g., *Joe was interested in a car. On the one hand, it looks flashy. On the other hand, it doesn't get very good mileage*.). If the expected contrast is delayed, comprehenders are predicted to process *On the other hand* differently depending on the type of intervening material.

Self-paced reading study: Participants (n=60, recruited from Amazon's Mechanical Turk) read sentences phrase-by-phrase via a web-based interface (IbexFarm). The intervening material varied—either leaving the expectation for contrast unfulfilled by mentioning causal information (1a,1b) or providing a contrast that could plausibly resolve the expectation for contrast (1c). Reading times were measured at *On the other hand*.

(1) SentenceA: Joe was interested in a car.
SentenceB:
(a) *On the one hand*, he would like to buy it, because it looks flashy.
(b) *On the one hand*, it looks flashy, so he would like to buy it.
(c) *On the one hand*, he would like to buy it, but he might try leasing it first.

SentenceC: *On the other hand*, it doesn't get very good mileage.

As predicted, *On the other hand* in SentenceC was read faster following conditions with causal information (1a,1b) than contrastive information (1c), suggesting that participants used *On the one hand* as a cue to an upcoming contrast and were surprised (as evidenced by their reading-time slowdown) by *On the other hand* when they had already encountered a plausible contrast. Comprehenders thus use discourse connectors to predict discourse relations and can maintain such predictions across clauses.

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