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“Gik guldfisken ind i butikken?”: Cross-Scandinavian differences in reliance on top-down information in spoken language processing.

Abstract:
Research has suggested that Danish may be intrinsically harder to understand and learn both as L1 (e.g., Bleses Basbøll, & Vach, 2011) and L2 (e.g., Gooskens et al., 2010) than closely related languages such as Norwegian. The phonetic structure of Danish, which — unlike that of its Scandinavian neighbors — is characterized by pervasive reduction processes (e.g., Basbøll, 2005), has been hypothesized to make processing particularly challenging by blurring boundaries between words and degrading the morphological information at the end of words. To compensate for this qualitatively reduced input, speakers of Danish may develop implicit top-down strategies in sentence processing that make them more reliant on contextual information and prior knowledge (e.g., Kintsch, 2005; Marslen-Wilson & Welsh, 1978) than speakers of closely related languages. This attainment may make Danish communication less prone to breakdowns especially in situations of “noisy” language use (e.g., Gibson, Bergen, & Piantadosi, 2013).

Building on previous studies investigating the relative weight of top-down cues in sentence processing (e.g., Dabrowska & Street, 2006; Gibson et al., 2013), we tested this hypothesis by presenting adult native speakers of Danish and adult native speakers of Norwegian with a number of short stories in a sentence-picture matching experiment. In each story, the main event was either semantically plausible (e.g., The boy bought a goldfish for his sister) or implausible (The goldfish bought a boy for its sister); likewise, the premises of each story were manipulated to be either semantically plausible or implausible (e.g., The boy walked into the store vs. The goldfish walked into the store); additionally, the syntactic structure of the story was manipulated, so that the main event occurred in sentences with either active vs. passive or propositional object vs. double object sentences structures. Different degrees of semantic incongruency in the narrative as well as syntactic complexity defined different levels of informational noisiness of the language input. For each story, comprehension accuracy was assessed via picture matching, and online language processing was measured via mouse-tracking.

The results showed that comprehension accuracy diminished as a function of semantic and syntactic complexity in equal measure for both language groups. However, analyses of real-time processing revealed interesting cross-linguistic differences, suggesting that speaker of Danish rely more on contextual information when processing spoken Danish, than Norwegian adults processing spoken Norwegian. Implications of these results for fundamental psycholinguistic and pragmatic questions will be discussed.
References:


