What linguistic knowledge underlies second language oral fluency? The interface between cognitive fluency and utterance fluency

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Abstract

Background and Research Goals

In the context of the learning, teaching, and assessment of second language (L2) speaking skills, L2 fluency has been regarded as one of the important constructs. In order to distinguish different conceptualizations of fluency, Segalowitz (2010) proposed three variants of fluency: *utterance fluency* (UF; i.e., observable temporal features of speech), *cognitive fluency* (CF; i.e., the speaker's ability to manipulate L2 knowledge efficiently), and *perceived fluency* (PF; i.e., listener's subjective judgements of fluency). However, among these three variants of "fluency", although the relationship between PF and CF has been extensively examined (Bosker et al., 2013; Derwing et al., 2004; Suzuki & Kormos, 2020), it is still unclear how CF is associated with UF (De Jong et al., 2013; Kahng, 2020). To this end, the current study examined the contribution of cognitive fluency to utterance fluency, taking a structural equation modelling (SEM) approach. The study also analyzed the stability of factor structure of utterance fluency (Tavakoli & Skehan, 2005)—speed, breakdown, and repair fluency—and of cognitive fluency, across speaking tasks.

Method

A set of cognitive and utterance fluency measures were collected from Japanese-speaking learners of English ($N = 128$). Using a range of psycholinguistic tests, cognitive fluency was assessed in terms of linguistic resources and processing speed at the different linguistic levels: vocabulary (vocabulary size, lexical retrieval speed), grammar (sentence construction speed, grammaticality judgement test) and pronunciation (articulatory speed). In order to measure utterance fluency, the speech data were elicited via four speaking tasks which differed in the quality of speech processing demands: argumentative speech, picture narrative, and text retelling speech with/without read-aloud assistance). The speech data were analysed in terms of three subconstructs of utterance fluency (speed, breakdown, and repair fluency).

Results and Discussion

Prior to a SEM analysis, a set of confirmatory factor analyses (CFA) confirmed that utterance fluency has a three-factor structure (speed, breakdown, and repair fluency) and that cognitive fluency has a two-factor structure (linguistic resource and processing speech). A SEM analysis, based on these factor structures of cognitive and utterance fluency, showed that speed fluency was primarily associated with processing speed, while both linguistic resource and processing speed equally contributed to breakdown fluency. Repair fluency was significantly linked to linguistic resource, only when the content of speech is predefined (picture narratives and text retelling speech). Meanwhile, repair fluency was found to be independent of processing speed in all speaking tasks.

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