Speech Fluency

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Xun Yan, Yuyun Lei, and Hyunji (Hayley) Park

Speech fluency has been extensively researched as a core construct in oral language proficiency development. Fluency has been conceptualized in both broad and narrow senses. In the broad sense, fluency, synonymous with overall proficiency, is an all-encompassing term covering a range of speech features such as rapidity, accuracy, complexity, coherence, and even idiomaticity (Fillmore, 1979). In contrast, the narrow approach limits fluency to temporal characteristics of speech, i.e., rapidity and smoothness (Lennon, 1990). Tavakoli and Skehan (2005) further classified temporal fluency into three dimensions: speed, breakdown, and repair fluency, where speed fluency focuses on the rate features of speech, breakdown fluency refers to the nature of disfluencies, and repair fluency deals with effort and strategies used to overcome disfluencies.

When it comes to operationalizing fluency, applied linguistics research tends to use macro-level temporal features that are computed by counting the number of syllables or pauses produced in speech (e.g., speech rate, number of pauses). These features can be easily automated and are often regarded as proxies of overall proficiency (e.g., Ginther et al., 2010; Kormos & Denes, 2004). In contrast, research in cognitive sciences tends to focus on micro-level disfluency features that reflect where and why pauses occur and how they are repaired (e.g., pause position and repair). These features can provide evidence for the cognitive processes of speech

X. Yan (✉) · H. (Hayley) Park
Department of Linguistics, University of Illinois at Urbana-Champaign, Illinois, USA
e-mail: xunyan@illinois.edu

H. (Hayley) Park
e-mail: hpark129@illinois.edu

Y. Lei
East Asian Languages and Cultures, Wake Forest University, Winston-Salem, USA
e-mail: leiy@wfu.edu

H. Mohebbi and C. Coombe (eds.), *Research Questions in Language Education and Applied Linguistics*, Springer Texts in Education,
https://doi.org/10.1007/978-3-030-79143-8_87

production, enhancing our understanding of how language is comprehended and produced (e.g., Clark & Tree, 2002).

In language acquisition, fluency is a crucial construct for learners acquiring a new language. However, fluency does not necessarily develop in a linear, consistently progressive fashion. As overall proficiency increases, there is often a trade-off among fluency, complexity, and accuracy (Skehan, 2009). Fluency development is not simply a matter of increasing speed or speaking non-stop, but rather a matter of developing procedural linguistic knowledge that results in the perception of fluency (Towell et al., 1996). When the procedualization of linguistic knowledge is achieved, temporal fluency will emerge as a natural outcome.

The Research Questions

1. What do we mean by fluency?
2. What temporal features are reliable indicators of fluency?
3. What is the relationship between fluency and language proficiency?
4. What are the relationships among the subdimensions of speech fluency?
5. What are the relationships between speech fluency and other components of language proficiency (e.g., linguistic complexity and accuracy)?
6. What strategies do second language speakers use to develop speech fluency?
7. What strategies do first and second language speakers use to overcome disfluencies in speech?
8. How does the speech fluency of second language speakers develop over time?
9. What factors can influence the development of speech fluency of second language speakers?
10. How do first and second language speakers process disfluencies in speech?

Suggested Resources

Clark, H. H., & Tree, J. E. F. (2002). Using uh and um in spontaneous speaking. *Cognition, 84*(1), 73–111.

Clark and Tree explored the use of fillers *uh* and *um* in several large corpora of spontaneous speech of native English speakers. They examined *uh* and *um* in terms of their preceding and following delays, their locations, and their prosodic features. Their analysis showed that native English speakers use *uh* and *um* to signal that they are going to have disfluency (pause or hesitation) in speech. If the pause is expected to be short, they will formulate *uh*, and if long, *um*. Based on where they initiate the hesitation, they decide whether to attach the filler as a clitic onto the previous word (e.g. and-uh) or prolong it. Listeners can use these signals, in turn, to

implicate if the speaker encounters planning problems or wants the next turn. This article provides insights into where, when and how disfluencies occur.

Ginther, A., Dimova, S., & Yang, R. (2010). Conceptual and empirical relationships between temporal measures of fluency and oral English proficiency with implication for automated scoring. *Language Testing*, *27*(3), 377–399.

Ginther et al.'s paper examined the relationship among temporal measures of fluency and holistic scores assigned by raters on a local oral English proficiency test. While previous studies are usually concerned with a small number of samples and deal only with one proficiency level, their study has a large sample of L1 and L2 speakers, covering a full range of proficiency levels specified on the rating scale. Their results showed that a number of fluency measures (e.g. speech rate, mean length of run, the number, and length of silent pauses) had moderate to strong correlations with the holistic score, suggesting that these variables can be selected as reasonable proxies of overall language proficiency for the development of automated scoring systems for speech. However, temporal measures of fluency alone could not distinguish adjacent levels on the rating scale, so the authors call for further inquiries into the broader sense of fluency to understand the meaning of test scores.

Lennon, P. (1990). Investigating fluency in EFL: A Quantitative Approach. *Language Learning*, *40*(3), 387–417.

In this well-cited article, Lennon defines fluency in two different senses. Fluency, in the broad sense, is a cover term for global oral proficiency, while in the narrow sense, it refers to "native-like rapidity". Concerning the narrow sense of fluency, he conducted an empirical study to investigate what variables contribute to perceived oral fluency and how these variables change over time. Fluency measures were taken for speech samples of four EFL learners in a study abroad program over a six-month period. His results showed that even though all participants were perceived as more fluent after studying abroad, their performances varied in the two subcomponents of fluency Lennon identified. That is, while learners tended to improve on "the temporal component", individual differences existed in the "vocal dysfluency marker component". Lennon suggested that among fluency variables, some are "core" and some are "peripheral".

Riggenbach, H. (2000). *Perspectives on fluency*. Ann Arbor, MI: University of Michigan Press.

This edited volume covers different perspectives on fluency from linguistics, psychology, language education, and speech pathology. It begins with a survey of different notions of fluency, including articles from Lennon, Fillmore, Koponen and Riggenbach, and others. In the second section, essential components of fluency are examined, such as nonverbal behaviors (Bavelas), intonation (Wennerstrom), time associated with negotiating turns (Fiksdal), and speaker's perception of sense of self (Doutrich). Later, the book discusses hypotheses regarding what cognitive processes may underlie fluency, including attentional skills (Segalowitz), encoding

capacity (Pawley and Syder), or neural and conceptual network (Oppenheim). The last section of the book provides several empirical studies on factors affecting the impression of a speaker's fluency or ratings on a fluency assessment scale. Those factors are study abroad experience (Freed), conversational skills or strategies (Morales- López), and task type, or genre of talk (Ejzeberg).

Segalowitz, N. (2010). *Cognitive bases of second language fluency*. New York, NY: Routledge.

Segalowitz's book suggests a conceptual framework for thinking about L2 fluency from a cognitive science perspective. Each chapter provides a detailed survey of the relevant literature by answering and expanding on five anchor questions on L2 fluency. Such questions cover reliable indicators of L2 utterance fluency, the relationship between general cognitive processing fluency and L2 fluency and social factors influencing L2 fluency. The resulting framework summarized in the final chapter places L2 fluency in a dynamic system, where L2 speech production is influenced by at least four interacting components, namely cognitive fluency (or processing efficiency), motivation to communicate, social context and relevant experiences (e.g. exposure or practice). By initiating a cognitive science approach to L2 fluency, the author opens up opportunities to study L2 fluency from a broader, interdisciplinary perspective. The volume concludes with implications for teaching and learning and an annotated bibliography for recommended reading.

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Xun Yan is an associate professor of Linguistics, Second Language Acquisition and Teacher Education (SLATE), and Educational Psychology at the University of Illinois at Urbana-Champaign. At UIUC, he is also the director of the university-level English Placement Test (EPT), designed to assess international students' writing and speaking skills for academic purposes. His research interests include speaking and writing assessment, scale development and validation, psycholinguistic approaches to language testing, rater behavior and cognition, and language assessment literacy. His work has been published in *Language Testing, TESOL Quarterly, Assessing Writing, Journal of Second Language Writing, System,* and *Asian-Pacific Education Researchers.*

Yuyun Lei is a visiting assistant professor of Chinese at Wake Forest University. She has been working as a language instructor for the Chinese language program, and also as a content developer and rater for the university-level English placement test. Her research interests include second language development and assessment, second language speech production, and computer-assisted language learning. She has published papers in the *Foreign Language Annals*, *Journal of Technology and Chinese Language Teaching*, and *Chinese Language Education and Research*.

Hyunji (Hayley) Park is a Ph.D. student in the Linguistics Department at the University of Illinois at Urbana-Champaign. She has been working as a research assistant for the in-house ESL placement test, EPT, and has contributed to test development, test administration, rater training and related research projects for the local test. Her research interests lie in language testing and computational and corpus linguistic approaches to language development and assessment. She has made several conference presentations including those at the American Association for Applied Linguistics (AAAL) and Midwest Association of Language Testers (MwALT).