


2012

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Recommended Citation

Zehnder, John (2012) "Second-Language English Fluency Change in Native-Speaker Context," *Journal of Undergraduate Research at Minnesota State University, Mankato*: Vol. 12, Article 14.

DOI: <https://doi.org/10.56816/2378-6949.1022>

Available at: <https://cornerstone.lib.mnsu.edu/jur/vol12/iss1/14>

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Second-Language English Fluency Change in Native-Speaker Context

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Abstract

This study examines the influence of social context on oral proficiency change among English language learners on the campus of an American university. Speech samples were taken from 2 rounds of interviews with 9 East Asian women. These were analyzed using the phonetic analysis program Praat in order to determine each speaker's rate of stressed syllables at the beginning and end of the study. The change in these rates was used as a proxy for fluency change. This was then compared with each speaker's social context. The results suggested that English language learners improve their fluency when they have at least one English-speaking friend and do not have a partner who shares their own native language.

Introduction

As our world becomes ever more interconnected, people from different language backgrounds are increasingly required to communicate with each other. This means that it is more important than ever before to find ways to improve the learning of English as a second or foreign language within specific environments. The importance of social context, as part of the language learning process, however, is often neglected throughout the research literature (Tarone, 2007). Social context includes an individual's social network and current social surroundings, as well as background culture (Barnett & Casper, 2001).

In a study to fill this gap, Lybeck (2002) found that a social context that includes a social network comprising supportive native speakers correlates with more native-like pronunciation for nonnative speakers. However, this previous research only analyzed pronunciation improvement through specific phonological features, such as /r/, word stress, syllable length, as well as other segmental features. However, other research suggests that prosodic features, such as intonation, sentence stress, pausing, and speaking rate, may be better predictors of language fluency (Anderson-Hsieh, Johnson, & Koehler, 1992; Derwing, Munro, & Wiebe, 1998). Furthermore, this type of research has not been performed with nonnative speakers using English in the U.S.

The goal of this new study is to build upon this previous research by focusing on international students and the composition of their immediate social support networks in an American university context. Instead of measuring specific segmental features, the rate of stressed syllables was measured as a proxy for global language fluency. For each participant, fluency change was calculated over the course of the study, and this was subsequently compared

with social support network data. The analysis generated some idea of the kinds of social situations that were most conducive to language learning.

Literature Review

Lybeck (2002) investigated the change in Norwegian language abilities of American women living in Norway to determine the affect of social context on pronunciation improvement. She performed interviews over a six month period in which participants were asked questions in Norwegian about their social networks and acculturation progress. The portions of the interviewee's responses given in Norwegian were then analyzed at the segmental level. The realizations of segmental features such as word stress, syllable length, and /r/ were compared with those expected from native speakers. Change in pronunciation accuracy over the study was then compared with the qualitative interview responses. Lybeck found that the language learners showed larger improvement when their social contexts included social networks of supportive friends to assist them. It turns out that the women rarely experienced this ideal situation. Local Norwegians were often indifferent to the needs of the language learners and typically their social networks were difficult to enter.

Although Lybeck's study used the production of individual segmental features to measure language ability, prosody may actually be a better measure of oral language proficiency. Segmental features include the discrete units of speech that occur in a linear sequence, such as vowels and consonants (Crystal, 2003). In contrast, prosody is considered to be "suprasegmental" because its various sub-features occur over streams of segments (Wennerstrom, 2001). It is also non-linear because its components may be overlapping. The role of prosody is to convey secondary semantic and pragmatic information not otherwise encoded by grammar or vocabulary.

To fulfill this purpose, it employs a diversity of features, including sentence stress, rhythm, pausing, and intonation.

The strength of prosody in predicting oral competence was strongly demonstrated by Anderson-Hsieh, Johnson, and Koehler (1992) when they performed a study of pronunciation among English language learners (ELLs). In that study, native speakers rated nonnative speakers for overall pronunciation accuracy. The researchers found this to be most strongly correlated with prosody, rather than segmental accuracy or correct syllable structure. Derwing, Munro, and Wiebe, (1998) showed related results when they ran a study of educational techniques. In their study, they divided a cohort of ELLs into three groups and taught each with a different instructional method. They then enlisted the help of ESL teachers to rate the learners for fluency, comprehensibility, and accentedness. Not only did they find that fluency and comprehensibility are linked, but that a global language teaching technique emphasizing fluency does the best job of improving students' comprehensibility.

These studies both indicate that fluency is one of the strongest measures of global language proficiency. However, it is difficult to define what exactly makes someone sound fluent. To clarify the meaning of this term, Kang, Rubin and Pickering (2010) performed a study that managed to highlight a number of prosodic features associated with fluency. In their study nonnative speakers were assigned passages to summarize and were simultaneously recorded. Then native speakers rated these speech segments for fluency. Finally, these fluency ratings were correlated with various prosodic features. It turned out that the features most strongly associated with fluency were the number of syllables per second, the articulate rate, the length of speech runs, the rate of stressed syllables, as well as the use of high-rising intonation, mid-rising intonation, and mid-falling intonation.

Despite being particularly strong predictors of perceived fluency, intonation patterns are exceedingly difficult to measure and harder still to quantify. Pickering (2004) compared the intonational patterns of native speaker graduate teaching assistants with nonnative ones. She found that the nonnative speakers failed to use certain predictable patterns that would have made their lectures more comprehensible to native speakers. She could make this determination because all of the lectures were introductions or directions for chemistry lab sessions. Being identical in content, they were thus directly comparable. She also made no attempt to score participants based on their intonational accuracy. This rendered her methodology inapplicable to the current study because the current sought to quantitatively score fluency so that changes over time could be tracked accurately. Even more vexing, researchers cannot typically identify what intonational patterns speakers should be using because it is impossible to analyze the speakers' thoughts to determine what meaning they were trying to communicate (Brazil, 1997). Pickering's research also demonstrated the difficulty of transforming sound data into discrete intonation contours. This task is beyond the scope of most common speech software (see figure 1).

Fortunately, a study performed by Kormos and Denes (2002), addressing the linguistic features associated with fluency, demonstrated that an analysis of intonation may not be necessary to determine fluency. They asked nonnative English speakers to craft narratives to fit cartoon strips. Then a team of ESL professors rated these narratives for fluency. A number of different features were correlated, but one of the best overall indicators was rate of stressed syllables. This value is especially significant because it is relatively easy to measure.

In sum, past research has demonstrated that fluency is one the best ways to gauge oral language proficiency. Recent studies have also shown how it is possible to quantitatively measure language learners' fluency by recording their rates of stressed syllables. The current

study attempts to use this recent research to better address the role of social context in language learning. The specific aspect of social context being addressed is participant's social networks. The first goal of the study is to find out how fluency levels in a group of international students at an American university change over nine months. The second goal is to find out how this fluency change is related to the composition of participants' immediate social support networks.

Methodology

The basic methodology of this study was based on Lybeck (2002). Both language progress and language views were determined from interviews. To begin, participants were recruited from among campus international students. The original pool of participants included 18 students. However, due to a high level of attrition, only the samples of nine East Asian women were included in the analysis. They comprised five students from China, two from South Korea, one from Japan, one from Taiwan, and one from Vietnam (see table 1). Although all of them had studied English extensively, and three had spent varying amounts of time living in English-speaking countries, none had ever attended school in the United States. Their ages ranged from 23 to 46 at the beginning of the study. The participants were interviewed at the beginning of the 2009 fall semester and then again, the following spring semester, with a nine-month interval between interviews. The interviews included questions regarding participants' academics, acculturation experiences, living situation, and English learning progress. These were recorded and transcribed. The participants also answered questions about demographic information, such as their time spent learning English and the composition of their immediate social networks. In this study, social networks included all the people that participants considered significant in terms of emotional support. Thus there were tied most directly to emotional closeness rather than frequency of interaction.

Fluency was quantified through the proxy of speaking rate. This was measured using a computer-assisted technique pioneered by De Jong and Wempe (2009). The two researchers wrote a script add-on designed to count syllables within the speech analysis program Praat. Their script identifies syllables based on changes in spectral intensity and then assigns each syllable a unique number (see figure 2). The final units of the results come to be expressed in syllables per second. De Jong and Wempe found their script to be about 80 percent accurate. It essentially locates stressed syllables rather than all syllables, which was precisely the aim of this study. However in this case, the script could not be used entirely automatically because interviewee speech was interspersed with interlocutor speech. Thus speech segments had to be reanalyzed manually to subtract all interviewer syllables that the program counted inadvertently.

For each interview, at least two segments were analyzed and a mean was calculated. The segments were selected from at least three minutes into the interviews, in order to pinpoint the participants' most natural speaking rates. They all came from streams approximating monologic speech, and most were around one minute in length. This rate was then used as a proxy for fluency and these rates were compared between interviews to gauge the participants' change in fluency. Finally, the changes in fluency were considered in light of the participants' interview responses and demographic information.

Results

Surprisingly, most of the participants actually lost fluency. Altogether, six participants lost fluency, one held approximately steady, and two gained fluency (see table 2). As a whole, the data suggest that participants can be roughly divided into three groups based on their social situations. Participants who had no native speakers in their immediate social support network all lost fluency (see figure 3). For instance, Jung began with the highest fluency of all the

participants. She had been working at a local nursing home where she interacted with native-speaking residents and coworkers on a daily basis. However, she left her job in order to focus on her master's degree, and thus lost her English practice opportunities. Similarly, Seo-Yeon had previously been working for an internship in London, before which she had been studying English intensely in her home country of Korea. As she began her master's program, she began to socialize primarily with other Korean students and started watching Korean dramas for entertainment. Of all the participants, she showed the greatest percent drop in fluency.

The Participants with native speaker friends still lost fluency when they had long-term partners who shared their L1 (see figure 4). For instance, Guang began the study with the second highest level of fluency of all the speakers. However, partway through the study, she began dating a student who shared her L1 of Mandarin. As this happened, she increasingly socialized with other Chinese-speaking students rather than her American friends. By the end of the study, she showed the second-biggest percent drop in fluency. Similarly, Yun was living with her Chinese husband. Despite the fact she had been living in the United States for three years, her fluency remained low because she had almost no socialization outside of her husband.

Finally, the participants who had at least one native speaker in their immediate social support network and were single during the study either showed increases in fluency or remained steady (see figure 5). For instance, Yanmei actually lived with three native speakers and regularly socialized with them. Although, she had struggled during the first semester, she worked extremely hard to improve both her English and academics. By the second interview, she felt that she had really grown as a person and her life was "better each day." She showed the greatest increase in fluency of any of the participants.

Discussion

It appears that the social context of English-language learners has a major influence on their language fluency. The data suggest that language learners must have at least one native-speaker friend in order to show language improvement. This makes sense given the fact that many of the participants said in their interviews that they had little opportunity to practice English outside of the classroom. They often socialized entirely with speakers from their L1 backgrounds. Similarly, they often worked on homework and completed projects with other members of their L1 rather than forging groups with their native speaker classmates. Thus in-class discussions were the only opportunities that many students had to practice English in an authentic environment.

To further investigate this effect of social support network on language improvement, a similar study should be performed with a number of changes to make it more robust. Future versions of this study should include a uniform sampling method to ensure that participants' speech samples are directly comparable. This could involve having participants construct a narrative about a particular set of pictures as in Kormos and Denes (2004). This would cause the participants to discuss approximately the same topics, and it would also eliminate the issue of interruption by the interviewer. The study should also be performed with a larger number of participants so that statistical measures could be used to determine the strength of the effect of social relationships and language learning. With larger sample sizes, a more comprehensive, quantitative analysis of social network data would be possible. Future studies should also control for the variable of prior English proficiency among the participants. Baseline competence could have a major effect on the ability of ELLs to improve particular skills, such as fluency.

Conclusion

Social context clearly has a major effect on language learning. It appears that the composition of a language learner's social support network affects how her oral proficiency changes over time. Thus simply living in an English speaking country is no guarantee of improved speaking skills. This has immediate implications for the teaching of English to nonnative speakers in the United States. Social context must be taken into consideration when designing university academic programs. If being able to have conversations with native-speaking friends is a prerequisite for improving fluency, then language programs should be designed to ensure that this happens. If students have no opportunity for complex and extended social interaction with native speakers, then perhaps no amount of ESL classroom work can make significant changes in their speaking abilities. Future research can better show how much social bonds impact learning, as well as which language learners could benefit most from stronger social networks in their target language.

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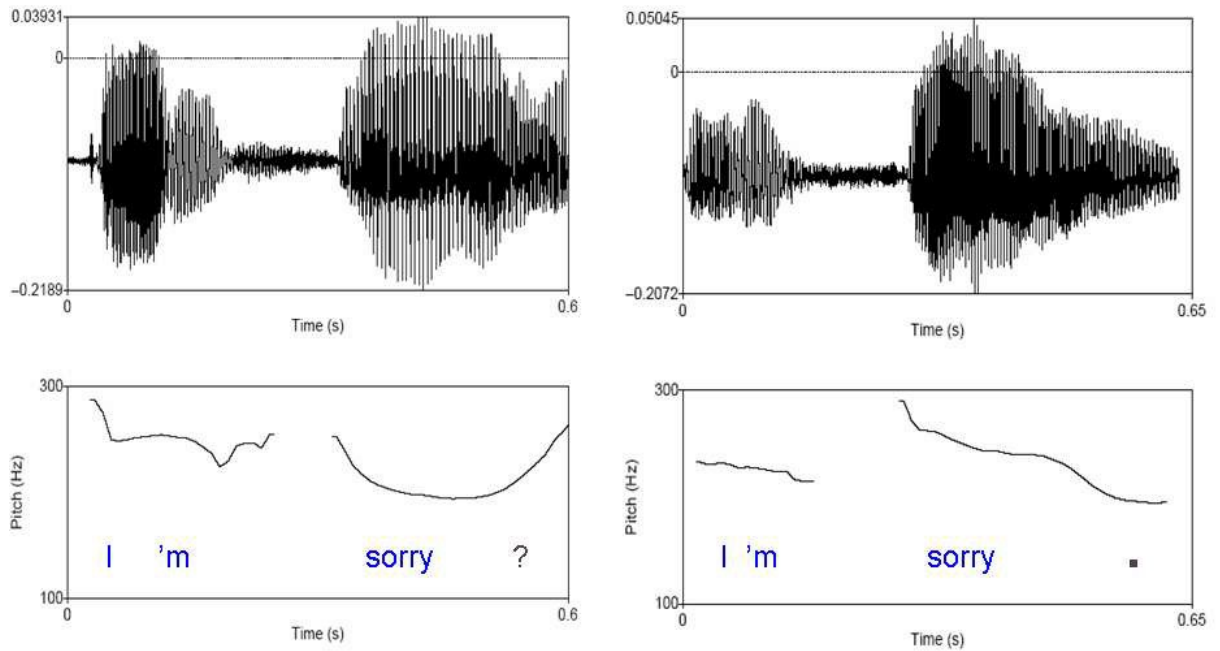


Figure 1. The conversion of spectral data into intonation contours.

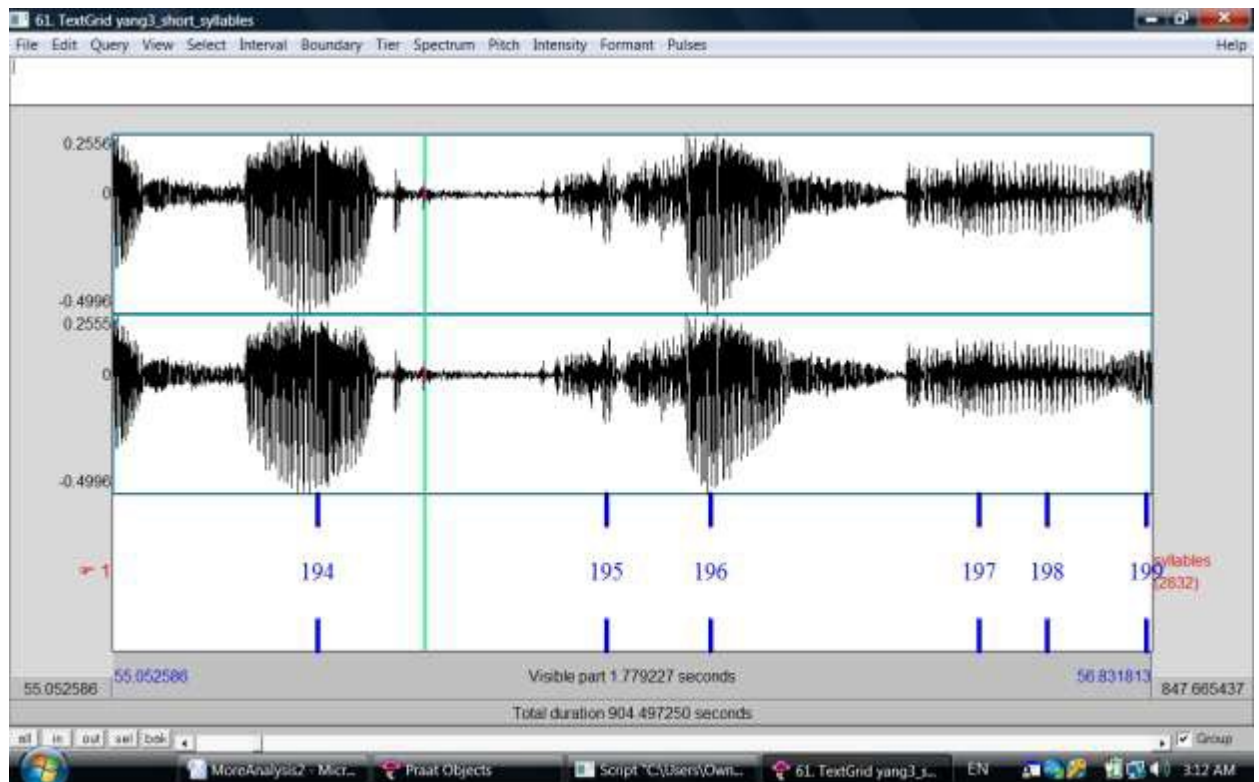


Figure 2. Using Praat to identify and count stressed syllables from spectral data.

Table 1

Demographic data of study participants

Participant	Age	L1	Time Spent in US	Started Studying English	Field of Study
Qi	29	Mandarin	Newcomer	Secondary School	TESL
Guang	23	Mandarin	Newcomer	Elementary School	TESL
Jung	46	Korean	Newcomer	Secondary School	Nursing
Seo-Yeon	29	Korean	Newcomer	Elementary School	TESL
Van	24	Vietnamese	Newcomer	Secondary School	TESL
Yoko	34	Japanese	1-year (years past)	Secondary School	Nursing
Yun	28	Mandarin	3-years (consecutive)	Elementary School	Accounting
Yanmei	23	Mandarin	Newcomer	Elementary School	TESL
Yingtai	25	Mandarin	Newcomer	Secondary School	TESL

Table 2

The rate of stressed syllables for the participants during each interview. Values for interviews are given in syllables per second and a percent change is also included.

	Interview 1	Interview 2	% Change
Yanmei	2.8	3.1	9.69
Yoko	3.13	3.26	3.96
Van	3.25	3.25	-0.01
Jung	3.57	3.45	-3.54
Yun	3	2.86	-4.78
Qi	3	2.85	-5.24
Yingtai	2.61	2.45	-6.44
Guang	3.55	3.3	-7.58
Seo-Yeon	3.35	3.08	-8.9

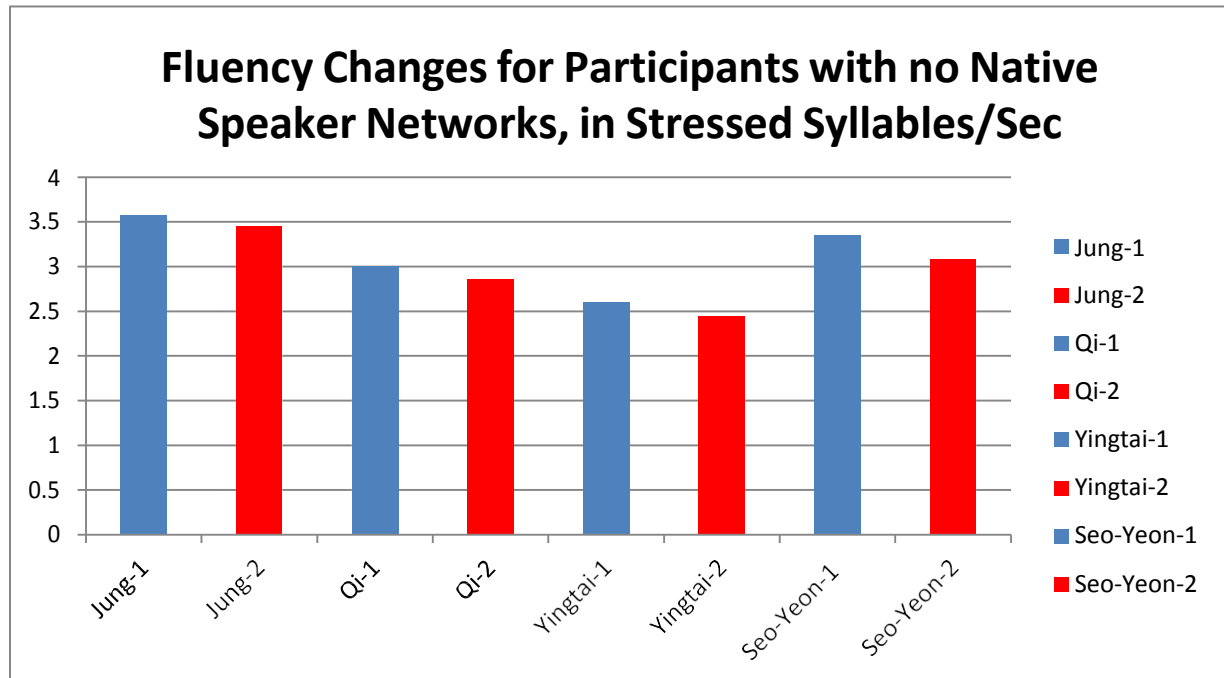


Figure 3. These participants had no native speakers in their immediate social support networks. The rates of stressed syllables for the first interview are given in blue and those for the second interview are given in red. The values represent stressed syllables per second.

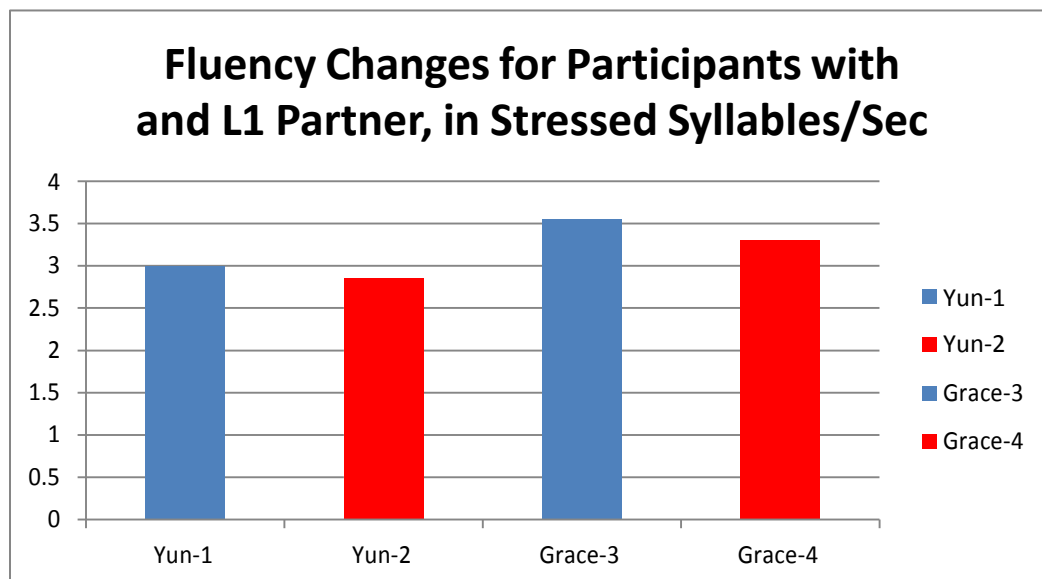


Figure 4. These participants had native speakers in their immediate social support networks but also had long-term partners with a shared L1. The rates of stressed syllables for the first interview are given in blue and those for the second interview are given in red. The values represent stressed syllables per second.

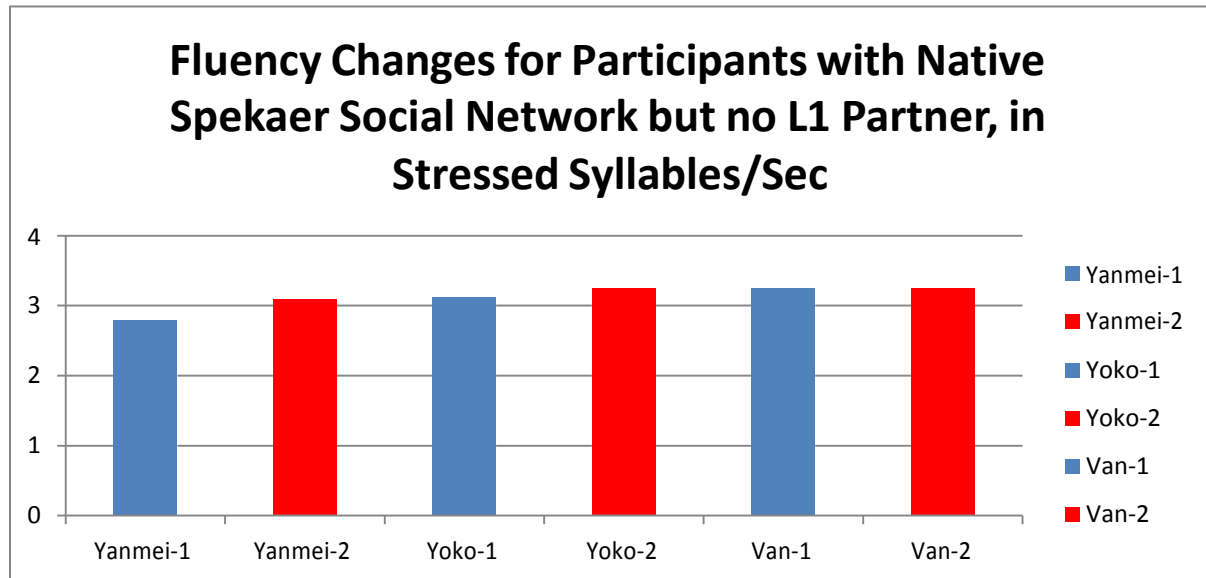


Figure 5. These participants had native speakers in their immediate social support networks and did not have long-term partners with a shared L1. The rates of stressed syllables for the first interview are given in blue and those for the second interview are given in red. The values represent stressed syllables per second.

Student Author Biography

John Zehnder, a native of Mankato, Minnesota is a senior at Minnesota State University, Mankato. John is majoring in Geography, with minors in Linguistics and Teaching ESL. John's future aspiration in academia is to pursue a PhD in Linguistics with emphasis on phonology and language change.

Faculty Mentor Biography

Karen Lybeck is an Associate Professor in the Department of English and the Director of the Teaching English as a Second Language (TESL) program. She teaches English linguistics and second language acquisition theory and research courses for graduate and undergraduate ESL licensure candidates and MA-TESL students, as well as undergraduates minoring in TESL and Linguistics. Her research interests focus on the social factors that affect language acquisition, second-language pronunciation, and functional grammar.