Leena Maria Heikkola and Jenni Alisaari

The effects of songs on L2 proficiency and spoken fluency: A pedagogical perspective

Introduction

A growing number of studies indicate that music benefits learning (see, e.g., Engh, 2013). Singing in particular is seen as an effective way to teach a second language, and as singing can have a positive effect on the recall of words, it may also benefit the development of spoken fluency (Koponen & Riggenbach, 2000). Moreover, rhythmic presentation of linguistic material (Purnell-Webb, & Speelman, 2008) and rhythmic reciting have been shown to be beneficial for language learning (Heikkola & Alisaari, 2017). However, classroom studies on the topic are lacking.

In this chapter, we present our study on how three teaching techniques, namely singing, listening to songs, and reciting song lyrics, affect the development of spoken fluency and proficiency. First, we introduce the multifaceted concept of fluency. Second, we present previous research on the effects of music and songs on language learning in particular. Third, we introduce the methodology of the present study, and finally, we present the results of the study and discuss their implications for second-language teaching.

Background

Fluency in second-language speaking

Fluency in second language (L2) speech is often understood as smooth and speedy delivery of speech without pauses, repetitions, and repairs (Lennon 1990). Segalowitz (2010) divides L2 fluency into three categories: 1) *cognitive fluency* (the ability to translate thoughts into speech), 2) *utterance fluency* (the ability to produce speech without hesitations, repetitions, and repairs), and 3) *perceived fluency* (the inference listeners make about speaker's ability to produce speech). Recently, Götz (2013) has suggested a thorough framework for spoken fluency including measuring various aspects of fluency. Götz (2013: 2) lists three different aspects regarding productive spoken fluency: 1) *temporal variables* (e.g., length of runs, pause ratios, speech rate), 2) *the use of formulaic language*, 3) certain *performance phenomena* (e.g., self-repairs, hesitation phenomena, the use of discourse markers). In her framework, Götz also includes *perceptive fluency*: other global variables (e.g., accuracy, idiomaticity, intonation,

accent, use of pragmatic features, lexical diversity, sentence structure). Segalowitz' (2010) utterance fluency overlaps with Götz's (2013) productive fluency, and perceptive fluency (Segalowitz, 2010) is similar to Götz's (2013) perceptive fluency.

Traditionally, research on fluency in second-language acquisition (SLA) has focused on temporal fluency, such as speech–pause relationships and disfluency markers (Lennon, 1990), which supports the "fluency equals automaticity" approach (cf. Koponen & Riggenbach, 2000). Fluency can thus be seen as an impression that speech planning and speech production are functioning easily and efficiently (Lennon, 1990), reflecting the control speakers have over their L2 knowledge (Wolfe-Quintero, Inagaki, & Kim, 1998).

In this chapter, we focus on the spoken fluency of the speaker, and we understand fluency in the "narrow" sense (Lennon, 1990). We investigate productive fluency using a temporal measure (see Götz, 2013), and a measure for overall proficiency. We measure temporal fluency as *speech rate* (words/min), because it has been shown to correlate well with perceived spoken fluency (Kormos & Dénes, 2004), and it is often used as to measure speed fluency (Tavakoli & Skehan, 2005). In addition, we measure overall proficiency as the *total number of words*. The measure has been used as an indicator of written fluency (Wolfe-Quintero, Inagaki, & Kim 1998), and including this measure in the study enables us to compare the results of this study to our previous results on written fluency (Alisaari & Heikkola, 2016).

Music and language learning

There are a growing number of studies on the positive effects of music and songs on L2 learning (for a review, see Engh, 2013). Some studies show that melody and rhythm together result in the greatest benefits to language learning, and that singing is the most efficient learning technique for verbatim recall of sentences (Ludke, Ferreira, & Overy, 2014), and for developing written fluency in a L2 (Alisaari & Heikkola, 2016). There is also evidence for the benefits of melody combined with language for the recall of words (e.g., Sammler, Baird, Valabrègue, Clément, Dupont, Belin, & Samson, 2010). Other studies, however, have shown that it is rhythm that helps language learning the most when language materials are presented musically (see, e.g., Purnell-Webb, & Speelman, 2008).
L2 learning can be enhanced by many techniques, including songs and music, as it is an active, conscious, psychological, and social process (Van Lier, 2000). Comprehensible input and

available affordances are crucial for language learning (Van Lier, 2000), but active language production is also needed (Swain, 2000). When learners sing or recite songs, both affordances and production are present, especially if the understanding of the lyrics is supported by visual cues (Alisaari, 2016). Fluent speaking skills are essential for fluent communication. Since singing can improve the recall of linguistic elements (e.g., Ludke et al., 2014), it could be hypothesized that singing may help to develop the spoken fluency of language learners. The positive effect of singing on L2 learning can be seen especially in learning new words, since melody combined with words helps learners to memorize words more effectively than mere linguistic input (Legg, 2009; Ludke, Ferreira & Overy, 2014; Sammler et al., 2010; Thaut, Peterson & McIntosh, 2005). Thus, it can be assumed that singing can increase spoken fluency, since the increase in linguistic features in L2 knowledge (see Wolfe-Quintero, Inagaki, & Kim, 1998) can be thought to make speech production easier (Lennon, 1990).

Even though there is evidence for the benefits of using songs for L2 learning, there are only a few studies on how songs can be used in the classroom to increase fluency and overall proficiency. In the present study, we investigate how three teaching techniques (singing, listening to songs, and reciting song lyrics rhythmically) affect spoken fluency and proficiency in Finnish second-language learners. The reason for investigating all the three teaching techniques is that we can differentiate the potential effects of melody and rhythm versus rhythm only, as well as produced melody and rhythm versus perceived melody and rhythm. Also, by including all three techniques we will be able to compare the results of this study to our previous studies on written fluency. As there are no previous classroom studies on the links between rhythmically produced language and L2 learning, it is interesting to include this in the investigation to find out, whether it may have similar positive links to L2 learning as singing (see earlier studies, e.g. Engh 2013).

Research questions

In this study, we investigate how three teaching techniques (singing, listening to songs, and reciting song lyrics) are linked to the development of proficiency and spoken fluency. This will be done by answering the following two research questions:

1) Do the proficiency levels of the students change during the course?

2) Is there a relationship between the three teaching techniques (singing, listening to songs, and reciting song lyrics) and the development of spoken fluency and overall proficiency?

Methodology

Participants

The participants were students in two 4-week intensive courses in Finnish language and culture, organized by a Finnish university in cooperation with the Center for International Mobility (CIMO, for more information, see cimo.fi). CIMO and the local course organizers preselected the participants ($n = 67$) for courses I (beginner level) and IIA (intermediate level). The participants on beginner level course were mainly at language proficiency level A1–A2, according to the Common European Framework of Reference for Languages: Learning, Teaching, Assessment (CEFR) (Council of Europe, 2011), and had studied Finnish for 0.5 to 1 year. The participants in intermediate level course were at language proficiency level A2–B1, and had studied Finnish for 1 to 2 years. The participants were university students mainly from Europe and North America. The most common native languages of the participants were German, Russian and Spanish, and other Indo-European languages. All participants ($n = 67$) were between 18 and 33 years of age and had given their written consent to participate in the study.

The authors of the study re-evaluated the proficiency levels, initially evaluated by the students' Finnish teachers at their home universities, according to the CEFR. The evaluations were made based on the oral stories told in the pretest for the current study. The inter-rater reliability was over 97%. The students' oral language proficiency level varied from A1.1 to B2.2 (see Table 1). The 61 participants who completed both the spoken pretest and posttest are included in the analysis.

Table 1

Course participants' proficiency levels in different groups at the beginning of the course

Groups	Proficiency Level								
	A1.1 (n)	A1.2 (n)	A1.3 (n)	A2.1 (n)	A2.2 (n)	B1.1 (n)	B1.2 (n)	B2.1 (n)	B2.2 (n)
Singing group I (*n* = 10)	2	3	3	2	0	0	0	0	0
Listening group I (*n* = 9)	0	1	1	3	4	0	0	0	0
Reciting group I (*n* = 8)	0	0	1	2	5	0	0	0	0
Singing group IIA (*n* = 11)	0	1	3	6	1	0	0	0	0
Listening group IIA (*n* = 11)	0	2	2	0	3	2	2	0	0
Reciting group IIA (*n* = 12)	0	0	0	0	4	4	3	1	0
Total (*n* = 61)	2	7	10	13	17	6	5	1	0

In the present study, we studied the effects of three different teaching techniques on spoken fluency: singing, listening to songs, and reciting song lyrics. Based on the results of a placement test given by the local organizers on the first day of the courses, the students were divided into three groups within a course, comprising six groups in total. The teaching techniques were randomly assigned to the groups in the following way: singing was assigned to the weakest group, listening to songs to the middle group, and reciting song lyrics to the strongest group for both courses I and IIA. Although the differences in the language proficiency levels within a course level were not great (see Table 1), the group division into the six groups by the course organizers was not ideal for the purposes of this study. This was taken into consideration in the analysis by using the language proficiency level as a covariate, in order to examine the possible effect of language proficiency on spoken fluency and overall proficiency.

Teaching techniques

The intensive Finnish language and culture courses consisted of 80 hours of teaching. The instruction was organized as workshops in interaction, vocabulary, and grammar and reading comprehension. All the students (*n* = 61) participated in the seven study-related teaching sessions (singing, listening, or reciting). These sessions lasted for 15 minutes each, in total 105 minutes, and they were evenly spaced out during the course (see Table 2). The singing groups learned Finnish by singing, the listening groups by listening to the same songs, and the reciting groups by reciting the lyrics of the same songs rhythmically. The same songs were used in all groups, only the teaching technique differed. Altogether 18 songs (11 Finnish children's songs and 7 pop songs) were used in the teaching sessions. The children's songs were selected because of their easier melodies and lyrics, as this has been shown to benefit language learning (Racette & Peretz, 2007). The pop songs were chosen to retain the interest of the participants

and to introduce current Finnish music and culture to the participants. Both the children's songs and pop songs had similar vocabulary and structures, in order to fit the changing daily themes of the course, which included, but were not limited to, food, nature, and culture.

Table 2

Schedule for the singing, listening, and reciting sessions, and the pretest and posttest related to the study

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Week 1	Students arrive in Finland	Placement test Pretest (study)		Session 1	Session 2
Week 2	Session 3	Session 4	Session 5		
Week 3			Session 6	Session 7	
Week 4		Posttest (study)	Students leave Finland		

The children's songs were sung, listened to, or recited during two or more separate teaching sessions. Some of the children's songs (8 of 11) were combined with gestures and movement or play. This was done because embodiment has been shown to enhance learning and the recall of the lyrics (see, e.g., Coyle & Gómez Garcia, 2014). All the song lyrics were given to the participants on handouts that included visual cues to facilitate understanding. The meanings of the lyrics were discussed in all the groups.

In the research-related teaching sessions, the singing groups and the reciting groups differed from each other only in that the singing groups used melody in addition to rhythm. The listening groups differed the most from the other groups, as their role was the most passive, while the other groups were encouraged to actively produce Finnish in their teaching sessions. Apart from the study-related teaching sessions taught within the 80 hours of teaching, the courses were the same for all the participants within the same course level.

Procedure

The data for the presented study were collected in a pretest administered on the second day of the course and a posttest administered on the second-to-last day of the course. In the pretest and the posttest, the participants were asked to orally tell two stories in the target language, based on two comic strips depicting everyday events. The comic strips were designed for language teaching and learning by Schubi (1990). The participants did not have any time restrictions on telling the stories.

Similar narrative monologues based on picture story sequences have previously been widely used in L2 fluency research (see, e.g., Lennon, 1990). Such narratives enable more systematic comparison of the told stories; moreover, narratives are a frequently occurring form of informal spoken language and are usually deemed an ecologically valid way to study spoken fluency. In order to exclude possible story-specific problems for the subjects, the two stories used in the pretest and posttest were identical, as differences in a task may have an affect on performance (Thelen & Corbetta, 2002: 61).

The elicited stories were transcribed, their length in minutes was recorded, and the total number of words in the story was calculated (for absolute values presented individually for each participant, see Appendix A). In order to automatically calculate the number of words in the produced stories, all the non-linguistic information (e.g. coughing, sneezing) and the hesitation sounds (e.g., *um*), were removed from the transcriptions. In addition, the restart(s) of the same one word were counted as one word, e.g., *lei-lei-leipää* (bread). These restarts and repairs were included in the transcription, since these can be a part of fluency (e.g. repair fluency, Skehan 2009). These will be used in our future studies of speech fluency in L2 learners of Finnish.

Analysis

In the present study, we investigated which one of the teaching techniques (singing, listening, or reciting) would be the most effective when it comes to the development of spoken fluency and overall language proficiency in the stories told by the participants. The students also had other support for learning, namely song lyrics explained in pictures printed on handouts, and gestures in the singing and reciting groups. First, we investigated fluency as the speech rate (words per minute). Second, we analyzed overall language proficiency as the number of words produced in the oral stories. In addition, we investigated whether language proficiency levels improved during the course.

To investigate the development of the fluency of the participants' oral stories, we carried out a repeated measures ANCOVA, using a 4-step proficiency scale from A1 to B2 as per CEFR as a covariate, in order to find out whether there was an interaction between the development of fluency, defined as the speech rate of the oral narratives, development of overall language proficiency, defined as the number of words, and the different teaching techniques (singing, listening, or reciting). The covariate is usually assumed to be a linear variable, which the

language proficiency scale is not. However, we also did the analysis by using the language proficiency level as one of the factors in repeated measures ANOVAs, and the results are similar to the ones reported in this chapter. In order to investigate the change in the language proficiency, we also carried out a repeated measures ANOVA on the pretest and posttest language proficiency levels.

Results

In this section, we will present the results of the study. First, we present the results of the change in proficiency levels from the beginning to the end of the courses. Then, we discuss the results for the development of spoken fluency measured as speech rate, and overall proficiency measured in the total number of words in the three teaching groups (singing, listening to songs, and reciting song lyrics). We will first present the results for the whole participant group (n=61), and then for the beginner (I) and intermediate (IIA) level courses separately.

The development of oral proficiency

In order to answer the first research question, we evaluated the proficiency levels of the participants at the beginning and the end of the course using the CEFR. In order to minimize possible biases, the authors were not aware of whether narratives were produced in the pretest or posttest when assessing the proficiency levels. The proficiency levels were assessed on a four-step scale (1 = A1, 2 = A2, 3 = B1, 4 = B2).

All the participants were on oral proficiency levels A1–B2. The singing group was, on average, at proficiency level A1 at the beginning of the course (M=1.4, SD=.5), and closer to level A2 by the end of the course (M=1.6, SD=.5). At the group level, the listening group started a little below level A2 (M=1.9, SD=.7), and passed level A2 toward the end of the course (M2.2, SD=.5). The reciting group started a little above level A2 (M=2.4, SD=.8), and almost reached level B1 at the end of the course (M=2.7, SD=.9), on average.

A repeated measures ANOVA test reveals that oral proficiency improved during the course ($F_{1,58}$ = 11.227; p = .001; *partial eta²* = .162) (see Figure 1). The proficiency level is given on the Y-axis, and the line depicts the development of proficiency level from the pretest to the posttest. For all three groups, proficiency level thus improved significantly during the course. The three groups also differed significantly from each other in their proficiency levels ($F_{2,58}$ = 16.530; p < .001; *partial eta²* = .363). In pairwise comparisons, singing group's proficiency

was lower than the reciting group's (*p*<.001), and lower than the listening group's proficiency (p=.02). The listening group's proficiency was lower than the reciting group's proficiency (p=.02). Thus, the reciting group's proficiency was the highest, the listening group's the second highest, and the singing group's the lowest. There was no interaction between the-- group and the proficiency level, meaning that the change in the proficiency levels was not linked to a specific group. Thus, the three teaching techniques did not affect the language proficiency of the participants in different ways.
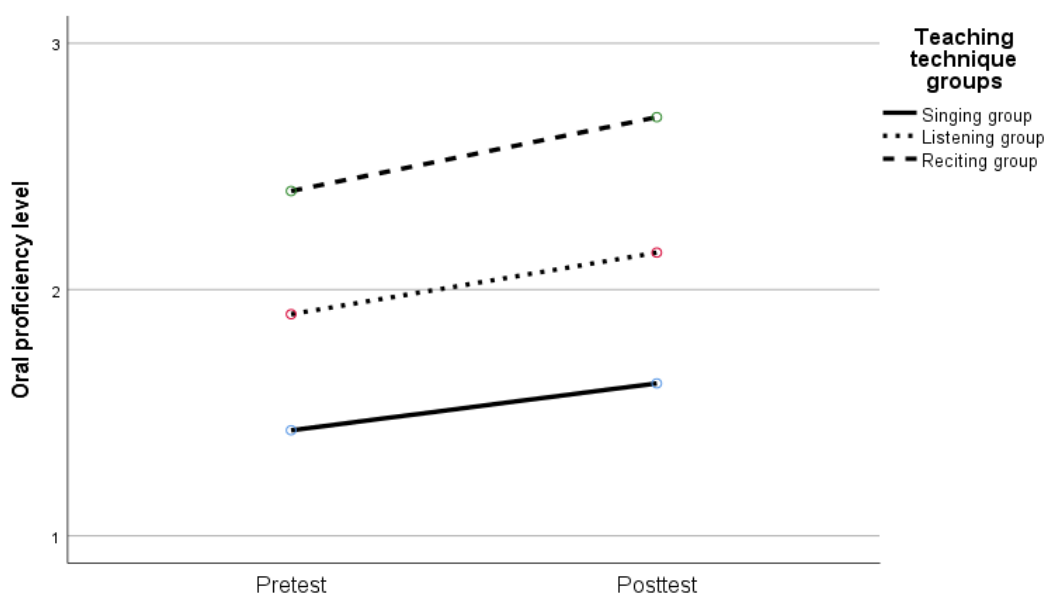

Figure 1. Change of oral proficiency from pretest to posttest in the three groups (singing, listening, and reciting) using the four-step scale (1 = A1, 2 = A2, 3 = B1, 4 = B2).

In the beginner course, the singing group was, on average, a little over level A1 at the beginning (M=1.2, SD=.4), and clearly over level A1 at the end of the course (M=1.3, SD=.5). The listening group were almost at level A2 (M=1.8, SD=.4), and made their way to level A2 by the end of the course (M=2.0, SD=0.0). The reciting group started a little below level A2 (M=1.9, SD=.4), and ended up at level A2 by the end of the course (M=2.0, SD=.5).

In the intermediate course, the singing group was a little above level A1 (M=1.6, SD=.5), and as a group, almost reached level A2 by the end of the course (M=1.9, SD=.3). The listening group started at level A2 (M=2.0, SD=.9), and by the end of the course, the group was above level A2 (M=2.3, SD=.7), on average. The reciting group was well above proficiency level A2

(M=2.8, SD=.6) at the beginning of the course, and reached level B1 by the end of the course (M=3.2, SD=.7). Thus, oral proficiency improved during the course for all groups on both the beginner and the intermediate courses.

Based on repeated measures ANOVAs on the separate courses, the proficiency level improved significantly only for course IIA ($F_{1,31}$ = 9.594; p = .004; *partial eta^2* = .236). The groups differed in their proficiency levels from each other on both course I ($F_{2,24}$ = 14.874; $p <$. 001; *partial eta^2* = .553) and course IIA ($F_{2,31}$ = 13.312; $p <$ .001; *partial eta^2* = .462). In pairwise comparisons for the beginner course, the singing group's proficiency was significantly lower than the listening group's ($p <$ .001), and the reciting group's proficiency ($p <$ .001). The listening group's proficiency and the reciting group's proficiency did not differ significantly. Overall, the reciting group improved their proficiency level the most. For the intermediate course, the singing group's proficiency was lower than the reciting group's ($p <$ .001) , and the listening group's proficiency was lower than the reciting group's ($p =$ .005). The proficiency levels did not differ significantly between the singing and listening groups. Also in course IIA, the reciting group improved the most. The interactions between the proficiency level and group were not significant for either course. The results are similar for the beginner and intermediate courses, as for the whole group together. The reciting group's proficiency level was the highest, and also improved the most.

The development of oral fluency in the three teaching technique groups
To answer our second research questions, we examined spoken fluency in the narratives told orally by the participants, as speech rate (words per minute), and overall proficiency as the total number of words. We will present the results from repeated measures ANCOVA tests for the development (i.e., change from the beginning to the end of the courses) in fluency in the three different groups (singing, listening to music, and reciting song lyrics). Initial oral proficiency levels for the courses (four-step scale) were included in the analysis as a covariate.

First, we examined the development of overall proficiency during the course as the total number of produced words in the oral narratives (see Figure 2). The number of words increased the most in the singing group (pretest: M=109, SD=39; posttest: M=112, SD=38), followed by the reciting group (pretest: M=163, SD=56; posttest: M=174, SD=72), and it decreased in the listening group (pretest: M=133, SD=41; posttest: M=123, SD=30). In the repeated measures ANCOVA with the proficiency level as a covariate, proficiency levels improved during the

course ($F_{1,57} = 31.590$; $p < .001$; *partial eta*^{2} = .357). The groups did not differ from each other in their produced number of words, however, nor did the change in the total number of words change significantly from the pretest to the posttest. Also, there were no interactions between the total number of words and proficiency level, nor between the total number of words and the group, which means that these variables were not linked. Thus, due to the effects of proficiency level differences between the three groups, even though the development of the total number of words from the pretest to the posttest is positive for the reciting and singing groups, and negative for the listening group, the difference between the three groups was not significant.
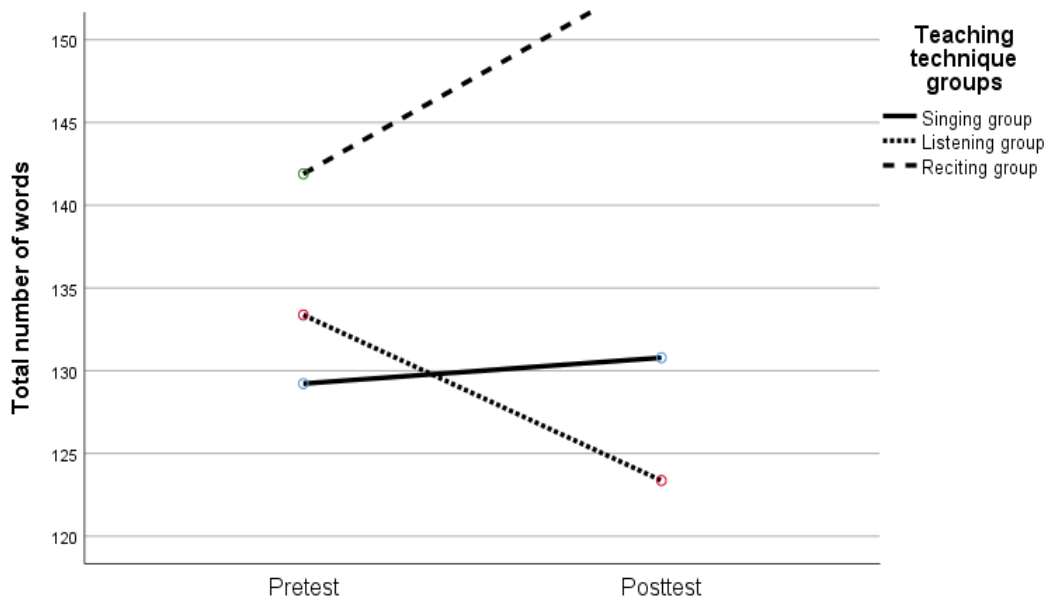

Figure 2. Change of overall proficiency measured as the total number of words from pretest to posttest in the three groups (singing, listening, and reciting). Covariates appearing in the model are evaluated at the following values: oral proficiency level (four-step scale) = 1.90.

Next, we investigated whether there were differences between the beginner and intermediate courses in the total number of words produced in the pretest and posttest, in order to see whether beginner-level or more advanced-level students benefited more from the three teaching techniques (singing, listening to songs, and reciting song lyrics). First, for the beginner course, the total number of words increased only in the reciting group (pretest: M=148, SD=36; posttest: M=157, SD=68). Surprisingly, the total number of words decreased in the singing group (pretest: M=95, SD=32; posttest: M=82, SD=27), and in the listening group (pretest:

M=136, SD=41; posttest: M=120, SD=24). For course IIA, the total number of words increased the most in the singing group (pretest: M=122, SD=41; posttest: M=139, SD=23), followed by the reciting group (pretest: M=174, SD=18; posttest: M=186, SD=75). In the listening group, however, the total number of words decreased (pretest: M=131, SD=44; posttest: M=126, SD=36).

By measuring the total number of words in the narratives, a tendency to a difference could be seen between the groups for the beginner course ($F_{1,23}$ = 2.854; p = .078; *partial eta^2* = .199). The reciting group increased the number of total words compared to the listening group. The groups in the intermediate course did not differ from each other significantly. The total number of words from the beginning to the end of the course did not change significantly for either course. The proficiency level between subjects differed significantly from the beginning to the end of the course, but only for the intermediate course ($F_{1,30}$ = 20.633; p < .001; *partial eta^2* = .408). There were no interactions for either course.

The results can be interpreted in the way that for the whole group, differences in proficiency levels explain the differences in the number of produced words, and the development from the pretest to posttest. However, looking at the two courses separately, the groups in the beginner course tend to differ in the amount of produced words: the reciting group increases their total number of words towards the posttest, but the singing and the listening groups produce less words at the posttest. Interestingly, for the beginner course, proficiency levels do not explain these differences between the groups. Thus, it seems that reciting song lyrics can have affected the production of this group.

Second, we examined the development of spoken fluency as speech rate (words per minute) (see Figure 3). It increased the most in the reciting group (pretest: M=34, SD=17; posttest: M=40, SD=17), the second most in the listening group (pretest: M=28, SD=13; posttest: M=33, SD=10), and the least in the singing group (pretest: M=22, SD=9; posttest: M=26, SD=11) In the repeated measures ANCOVA with the 4-step proficiency scale as a covariate, the speech rate became faster during the course ($F_{1,57}$ = 12.368; p = .001; *partial eta^2* = .178), and the proficiency level improved ($F_{1,57}$ = 72.897; p < .001; *partial eta^2* = .561). However, there were no differences between the groups. There was a significant interaction between the speech rate and the proficiency level ($F_{1,57}$= 4.700; p=.034; *partial eta^2*=.076), meaning that the higher the

proficiency level was, the faster the speech rate became. Thus, the results point to the fact that proficiency, not the teaching technique, explain the improvement of fluency.
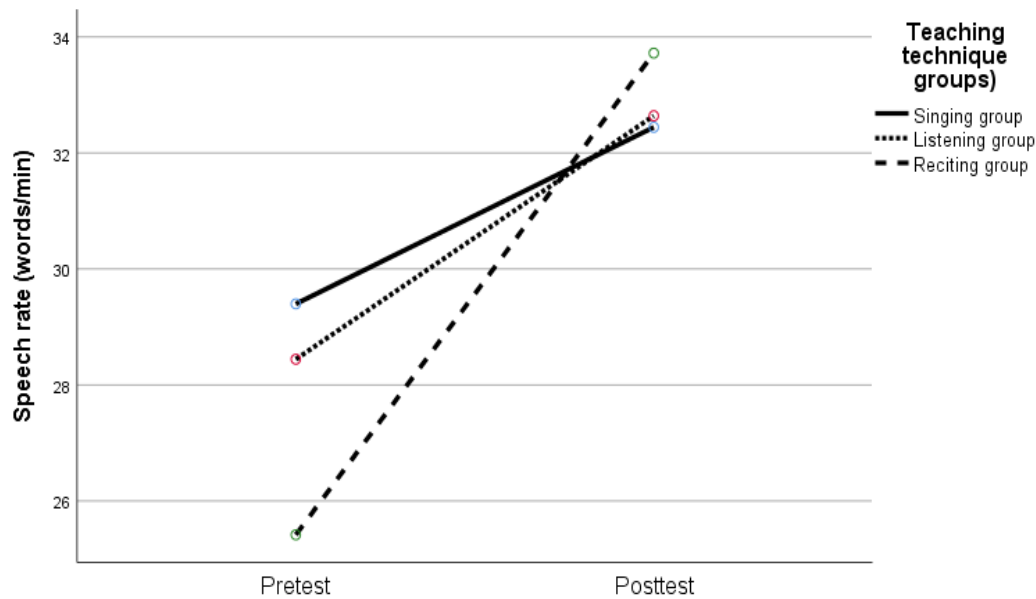

Figure 3. Change of spoken fluency measured as the speech rate (words per minute) from pretest to posttest in the three groups (singing, listening, and reciting). Covariates appearing in the model are evaluated at the following values: oral proficiency level (four-step scale) = 1.90.

The examination of the two courses separately showed that fluency increased in all the groups for both the beginner and the intermediate courses. For the beginner course, the speech rate increased the most in the listening group (pretest: M=23, SD=6; posttest: M=29, SD=7), followed by the singing group (pretest: M=15, SD=5; posttest: M=19, SD=8), and the least in the reciting group (pretest: M=21, SD=4; posttest: M=24, SD=6). For the intermediate course, the increase was the greatest in the singing group (pretest: M=27, SD=9; posttest: M=33, SD=9), the second greatest in the reciting group (pretest: M=43, SD=17; posttest: M=51, SD=13), and the smallest in the listening group (pretest: M=33, SD=16; posttest: M=35, SD=12).

For the beginner course, language proficiency improved during the course ($F_{1,23} = 6.828$; $p = .016$; *partial eta^2* = .229). There was no significant difference between the groups. However, in pairwise comparisons, there was a tendency toward a difference between the singing and listening groups ($p = .070$), the listening group improving more. Moreover, for the intermediate course, the speech rate improved significantly ($F_{1,30} = 15.714$; $p < .001$; *partial eta^2* = .344). In

addition, language proficiency improved significantly ($F_{1,30} = 32.242$; $p < .001$; *partial eta^2 = .518*). There was also a significant interaction between the speech rate and the proficiency level ($F_{1,30} = 9.655$; $p = .004$; *partial eta^2 = .243*), meaning that the higher the proficiency level, the more the speech rate increased toward the end of the course. There was also a significant interaction between the speech rate and the group ($F_{2,30} = 4.032$; $p = .028$; *partial eta^2 = .212*), that is, the groups improved their speech rate in different ways. In pairwise comparisons, however, no differences between the three groups were found.

Fluency measured as speech rate (words per minute) seems to increase during the course when looking at the whole group together. However, there are no significant differences between the three teaching technique groups, and instead, proficiency level explains the increase in fluency. In the beginner course, all groups improve their fluency, although not significantly, although there is a tendency towards the listening group improving their fluency more than the singing group. In the intermediate course, speech rate increased from the pretest to the posttest, and this increase is linked to both proficiency level and group. As for the whole group, the increase in speech rate in the intermediate course was explained mostly by proficiency level.

Discussion

The oral proficiency improved significantly for all three teaching groups (singing, listening, and reciting). The proficiency level was the highest in the reciting group throughout the course, the second highest in the listening group, and the lowest in the singing group. These results reflect the non-ideal differences in the proficiency levels of the groups at the beginning of the course, with the reciting group being the most advanced group, the listening group the second most-advanced, and the singing group the least advanced group. When looking at the development of the proficiency levels in the beginner and intermediate courses separately, the proficiency level improved significantly only for the intermediate course. However, there were significant differences between the groups for both courses. For both courses, the reciting groups' proficiency levels were the highest in the beginning of the course, and also improved the most. As this could affect the results of the development of spoken fluency and overall proficiency, we included proficiency level as a covariate in our further analysis.

Overall proficiency was investigated as the total number of words. Only the proficiency level had a significant effect on the development of the number of words produced. In other words, the more proficient the learners were, the more words they produced towards the end of the

course. So, even though the total number of words increased in the reciting and singing group, but decreased in the listening group, there were no significant differences between the groups due to the effect of proficiency level, which was used as a covariate in the analysis. These results contradict our previous results that singing improves written fluency the most compared to the other techniques (Alisaari & Heikkola 2016), even when language proficiency level was taken into account. As there are no previous studies on the effects or rhythmic production on L2 learning, we cannot compare the results to previous research directly. However, it has been shown that songs, poems and chants can improve L2 pronunciation and increase spoken fluency (Lems, 2005; Morley, 1991). Also, according to the results of our previous study on L2 pronunciation, there are indications that rhythmic production can have a positive impact on L2 spoken production (Heikkola & Alisaari 2017).

Next, we looked at the total number of words for the beginner and intermediate courses separately. For the beginner course, there was a tendency for a difference between the groups, but there was no change in the total number of words. For course IIA, the proficiency level increased significantly toward the end of the course, but the total number of words did not. The results point to the fact that proficiency levels explain the possible differences between the groups in the number of produced words. However, looking at the beginner course separately, the reciting group seems to increase the total number of words produced during the course more than the other two groups. As proficiency level is not linked to the number of words produced, this may point to the fact that spoken production has automatized the most in this group (Koponen & Riggenbach, 2000), which may be taken as preliminary evidence for reciting being an effective teaching technique for improving overall proficiency.

We also examined spoken fluency as the change in speech rate (words per minute) (see, Tavakoli & Skehan, 2005) from the pretest to the posttest. The speech rate became significantly faster toward the posttest, and also the proficiency level improved toward the end of the course. Also, there was a significant interaction between the speech rate and proficiency level, meaning that the more proficient the speakers were, the faster they spoke. However, the fact that the reciting group improved their speech rate the most could be explained by previous studies indicating that reciting and rhythm is a beneficial teaching technique because of its influence on recall of linguistic chunks (Purnell-Webb, & Speelman, 2008). It has been shown that rhythm and rhythmic movement can improve recall (Holme 2009), which is important for

automatizing language. Further, reciting enables the learner to practice production, which is important for learning (Swain, 2000).

Investigating the development of fluency as the change in speech rate from the pretest to the posttest for the beginner and intermediate courses separately, the proficiency level improved during the course, and there was a tendency towards a difference between the groups in the beginner course. It seems that the listening group improved more than the singing group. These results are different from our results on the development of written fluency (Alisaari & Heikkola 2016), where singing increased written fluency the most. However, writing and speaking are very different processes, and thus, they are not directly comparable. However, Ludke et al. (2014) have found that singing is more beneficial for language production than rhythm. Further research is needed for investigating the possible reasons for these contradictory findings.

For the intermediate course, both the speech rate and language proficiency increased during the course, and these were linked; the more proficient the participants were, the faster they spoke. There was also a significant interaction between these; the better the language proficiency, the faster the language production. As for the overall proficiency measured as the total number of words, these results contradict earlier research claiming that L2 learners in the beginner phase develop the total number of written words produced the fastest (Alisaari & Heikkola 2016)

As in all classroom studies, there are limitations. As the division of participants into the teaching technique groups was less than ideal, we had to take this into consideration in the analysis. Using covariate analysis naturally decreases the possibilities of finding statistically significant results, which was also the case in this study. In future studies, if possible, the intervention groups should be formed more randomly, minimizing possible effects on the variables under investigation.

The results of this study point to proficiency being an important factor in the development of overall proficiency measured by the total number of words, and spoken fluency measured by speech rate (words per minute). For the whole group together, as well as for the beginner and intermediate courses separately, the total number of words and speech rate increase the most in the most proficient speakers. Thus the differences in proficiency levels between the groups

may mask the differences in spoken fluency and overall proficiency between the teaching technique groups investigated in this chapter. In the future, the groups under investigation should be more ideally distributed regarding their proficiency level at the beginning of the intervention.

Conclusion

The results of this study point to the fact that oral proficiency level is tightly linked to the development of overall proficiency measured as the total number of words produced, and spoken fluency measured as speech rate. Based on previous results, unexpectedly, the total number of words and speech rate increased the most in the reciting group that had the highest proficiency level at the end of the intervention. For both these measures, proficiency level was linked to the observed development. Tentatively, especially for the more advanced course, it seems that also reciting as a teaching technique may have been beneficial for learning. This is in line with our previous research that shows reciting to be beneficial for learning pronunciation in L2 Finnish (Heikkola & Alisaari 2017). By reciting Finnish songs lyrics rhythmically, speaking Finnish becomes more automatized (Koponen & Riggenback 2000), and thus fluency also increases.

This chapter has presented one of the first intervention studies looking at L2 learners of Finnish where different types of teaching techniques related to songs were investigated. Classroom research is a valuable way to study, which methods really work in the language classroom. The results of this study point to reciting song lyrics rhythmically being a good way to promote both proficiency and spoken fluency. The main contribution of this study is that all the three methods can be used in the language classroom. However, according to our previous research, language teachers use all the techniques discussed in this study quite little, and reciting song lyrics or poems hardly at all (Alisaari & Heikkola 2017). Thus, based on the results of this study, we encourage language teachers to use these techniques in the language classroom.

References

Alisaari, J. (2016). *Songs and poems in the second language classroom: The hidden potential of singing for developing writing fluency*. Dissertation. Publications of the University of Turku, B 426. Turun yliopiston julkaisuja B426. Turku: Painosalama.

Alisaari, J., & Heikkola, L. M. (2016). Increasing fluency in L2 writing with singing. *Studies in Second Language Learning and Teaching*, *2*, 271–292. https://www.ceeol.com/search/article-detail?id=411481

Alisaari, J. & Heikkola, L. M. (2017). Songs and poems in the language classroom: Teachers' beliefs and practices. *Teacher and Teacher Education 63,* 231– 242. doi: 10.1016/j.tate.2016.12.021

Council of Europe (2011). *Common European Framework of Reference for Languages: Learning, Teaching, Assessment.* https://www.coe.int/t/dg4/linguistic/source/framework_en.pdf

Coyle, Y., & Gómez Garcia, R. (2014). Using songs to enhance L2 vocabulary acquisition in preschool children. *Teaching English to Young Learners*, *68*(3), 276–285. doi: 10.1093/elt/ccu015

Engh, D. (2013). Why use music in English language learning? A survey of the literature. *English Language Teaching*, *6*(2), 113–127. http://dx.doi.org/10.5539/elt.v6n2p113

Forgead, M., Schlaug, G., Norton, A., Rosam, C., Iyengar, U., & Winner, E. (2005). The relation between music and phonological processing in normal reading children and children with dyslexia. *Music Perception: An Interdisciplinary Journal*, *25*(4), 383–390. http://hdl.handle.net/2345/2696

Götz, S. (2013). *Fluency in native and nonnative English speech.* Studies in Corpus Linguistics. Amsterdam: John Benjamins.

Heikkola, Leena Maria & Alisaari, Jenni (2017). Laulun sanoja lausumalla taitavaksi ääntäjäksi? In Mikko P. Kuronen, Pekka Lintunen & Tommi Nieminen (eds.) Näkökulmia toisen kielen puheeseen – Insights into second language speech. *AFinLA-e.* Soveltavan kielitieteen tutkimuksia 2017, 10, 18–44.

Holme, R. (2009). *Cognitive linguistics and language teaching.* Basingstoke (Hampshire), UK: Palgrave Macmillan

Koponen, M., & Riggenbach, H. (2000). Overview: Varying perspectives on fluency. In H. Riggenbach (Ed.), *Perspectives on fluency* (pp. 5–25). Ann Arbor, MI: University of Michigan Press.

Kormos, J., & Dénes, M. (2004). Exploring measures and perceptions of fluency in the speech of second language learners. *System*, *32*, 145–164.

Legg, R. (2009). Using music to accelerate language learning: An experimental study. *Research in Education*, 82(1), 1–12. doi: 10.7227/RIE.82.1

Lennon, P. (1990). Investigating fluency in EFL: A quantitative approach. *Language Learning*, *40*(3), 387–417. doi: 10.1111/j.1467- 1770.1990.tb00669.x

Ludke, K. M., Ferreira, F., & Overy, K. (2014). Singing can facilitate foreign language learning. *Memory and Cognition*, *42*(1) 41–52. doi: 10.3758/s13421-013-0342-5

Purnell-Webb, P., & Speelman, C. (2008). Effects of music on memory for text. *Perceptual and Motor Skills*, *106*, 958–962. doi: 10.2466/pms.106.3.927-957

Racette , A., & Peretz, I. (2007). Learning lyrics: To sing or not to sing? *Memory and Cognition*, *35*, 242–253. doi: 10.3758/bf03193445

Sammler, D., Baird, A., Valabrègue. R., Clément, S., Dupont, S., Belin, P., & Samson, S. (2010). The relationship of lyrics and tunes in the processing of unfamiliar songs: An fMRI adaptation study. *Journal of Neuroscience, 30*(10), 3357–3578. doi: 10.1523/jneurosci.2751-09.2010

Schubi (1990). *Und dann?* Bildergeschichten. SCHUBI Lernmedein AG. Schaffhausen.

Segalowitz, N. (2010). *Cognitive bases of second language fluency.* Routledge. ProQuest Ebook Central. Retrieved from https://ebookcentral.proquest.com/lib/kutu/detail.action?docID=537901

Skehan, P. (2009). Modelling second language performance: Integrating complexity, accuracy, fluency, and lexis. *Applied Linguistics,* 30(4), 510–532. doi: 10.1093/applin/amp047

Swain, M. (2000). The output hypothesis and beyond: Mediating acquisition through collaborative dialogue. In J. P. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 97–114)*.* Oxford: Oxford University Press.

Tavakoli, P., & Skehan, P. (2005). Strategic planning, task structure, and performance testing. In R. Ellis (Ed.), *Planning and task performance in second language* (pp. 239–276). Amsterdam: John Benjamins.

Thaut, M. H., Peterson, D. A., & McIntosh, G. C. (2005). Temporal entrainment of cognitive functions: Musical mnemonics induce brain plasticity and oscillatory synchrony in neural networks underlying memory. *Annals of the New York Academy of S c i e n c e*, 1060, 243–254. doi: 10.1196/an-nals.1360.017

Thelen, E., & Corbetta, D. (2002). Microdevelopment and dynamic systems: Applications to infant motor development. *Microdevelopment: Transition Processes in Development and Learning*, *7*, 59–79.

van Lier, L. (2000). From input to affordance: Social-interactive from an ecological perspective. In J. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 245–260). Oxford: Oxford University Press.

Wolfe-Quintero, K., Inagaki, S., & Kim, H.-Y. (1998). *Second language development in writing: Measures of fluency, accuracy, and complexity.* Honolulu: University of Hawaii Press.