

# **A PILOT STUDY ON THE POTENTIAL USE OF TOMATIS METHOD TO IMPROVE L2 READING FLUENCY**

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## **Abstract**

This was a pilot study that used the Tomatis Method to see the effects it had on L2 reading fluency in a group of Taiwanese learners. Eight volunteers participated in this study undertaking 40-hours of before-and-after-experimental treatments. The results from the analysis showed that the participants had significant improvements in the areas of fluency, tone, stress, and intelligibility. However, there was not a significant improvement in pronunciation. This study concludes that the Tomatis Method seemed to help participants improve their reading fluency as well as increase the levels of confidence and motivation when learning the target language.

## **1. Introduction**

Oral fluency is an important skill and a major goal of foreign language learning. With the popularity of Communicative Language Teaching (CLT), teaching and learning focuses in second language (L2) have shifted toward communicative competence and oral proficiency. Although English in Taiwan is studied as a required subject from the third grade, many students have problems in speaking when they are in a situation that needs spoken English. Hsieh (2006), for instance, gave a good example of contestants who stood speechless on stage during an impromptu speech contest. Wang (2003) conducted a survey of Taiwanese college students in freshman English classes and found that speaking ability was the skill that the students thought they should improve the most (83.7%). Many students in Taiwan may be

deficient in oral skills since most of them lacked speaking practice in the target language both inside and outside of the classroom. Since much of L2 teaching in Taiwan is mainly teacher-centered, learners can master most language skills being taught from instructions, however, they often cannot communicate fluently and accurately (Hinkel, 2001).

One strategy for individuals to improve oral fluency is the practice of reading aloud. In language learning, reading fluency often equates oral fluency in speaking. However, without assistance, poor readers in L2 may read with many hesitations and mispronunciations when they are reading aloud. Therefore, this study examines the potential use of the Tomatis Method to help L2 learners improve oral fluency by increasing their ability to read aloud fluently.

## **2. Literature review**

Reading fluency is an important area of study in both first language (L1) and second language (L2). Fluent readers can comprehend the meaning of texts effortlessly at an appropriate rate. A characteristic of poor readers is one that often read with a lot of hesitations and mispronunciations. Most research in reading fluency has focused on word reading fluency, the ability to accurately and efficiently read words out of context (Crosson & Lesaux, 2009). As a result, studies have shown a correlation between reading fluency and reading comprehension (Rasinski & Hoffman, 2003; Rasinski, Homan & Biggs, 2009; Riedel, 2007; Wiley and Deno, 2005). Kuhn and Stahl (2004) identified three common components of reading fluency: “(a) accuracy in decoding, (b) automaticity in word recognition, and (c) the appropriate use of prosodic features such as stress, pitch, and appropriate text phrasing” (p. 416). Accuracy in decoding and automaticity in word recognition are related to vocabulary knowledge while the appropriate use of prosodic features is related to phonological awareness, all of which are important elements in reading fluency and reading comprehension.

Studies have showed that there is a strong relationship between vocabulary knowledge

and reading comprehension (Joshi & Aaron, 2000; Joshi, 2005; Manyak & Bauer, 2009; Martin-Chang & Gould, 2008; Ricketts, Nation, & Bishop, 2007). The more vocabulary a person knows, the easier it is for them to decode texts. Qian (2002) found that breadth and depth of vocabulary knowledge facilitates decoding in reading comprehension because a larger database gives the learner a better chance to guess the meaning of the unknown words while deeper vocabulary knowledge improves the results of the guessing work. Vocabulary knowledge not only refers to knowledge in the definition of the words, but also the ability to recognize and read the word aloud. This is why vocabulary knowledge is an important part of reading fluency.

To be able to read a word aloud accurately also involves phonological awareness. Phonological awareness is an understanding of and the ability to manipulate different sound units of the words, such as syllable, phoneme and rhyme (Kang, 2009). Research has shown that phonological awareness is a significant predictor of children's early reading acquisition (Stanovich, 1992, Vellutino & Scanlon, 2001) and that phonological processing skill in a person's L1 and L2 are related (Durgunoglu, 2002; Durgunoglu, Nagy, & Hancin-Bhatt, 1993; Geva & Wang, 2001). Students struggling with reading may also struggle with the ability to recognize and produce accurate sounds. For these students, there are ways to improve phonological awareness, mainly through explicit instruction focusing on phonemic awareness (McQuiston, O'Shea, & McCollin, 2008). Some of the classroom activities that foster phonemic awareness may include word games, poetry, or even use of music (such as singing or studying rhymes in hip-hop music). The use of auditory and articulatory training was also found to have significantly improved phonological deficit in children with dyslexia from six weeks of intensive training. (Joly-Pottuz, Mercier, Leynaud, & Habib, 2008).

In summary, to expand on Kuhn and Stahl's (2004) definition, components of reading fluency should not only include accuracy in decoding, automaticity in word recognition and the appropriate use of prosodic features. On the other hand, reading fluency should also

include/require vocabulary knowledge and phonological awareness as these skills are inter-related in reading fluency. Vocabulary knowledge can be increased from explicit instruction and study, however, improvement in phonological awareness is not something that can be easily done without aid. As is the case with listening comprehension, phonological awareness may be practiced from repeated listening of audio recordings but a new (and different) way of improving phonological awareness may be through the use of the Tomatis Method.

### **2.1. A brief description of the Tomatis Method**

The Tomatis Method (TM) was developed by Dr. Alfred A. Tomatis, a French ear, nose, and throat doctor. Dr. Tomatis was one of the first to discover the role of the ear and voice and its effects on our behavior and abilities. It was discovered that the ear and the larynx are part of the same neurological loop. As a result, any changes in the quality of the ear's listening will immediately affect the quality of voice and speech, and vice versa (Thompson and Andrews, 2001). From this, the "Tomatis Laws" were identified governing the ear and voice and their effect on our behavior and abilities. First, it was believed that the larynx can only produce the harmonics that the ear hears. Second, if we can restore the frequencies lost in our hearing, then these frequencies are instantaneously and unconsciously restored in the vocal emission. Finally, stimulation of the ear over certain periods of time can permanently modify the subject's hearing and their phonation (du Plessis, Burger, Munro, Wissing, and Nel, 2001; Weeks, 1988).

The Tomatis Method had various applications and usages. It was believed that with a sufficient amount of sound stimulation the ear can be retrained to listen, thus improve communication and social behavior for people suffering from auditory processing problems such as dyslexia, attention deficit disorder and autism. Dr. Tomatis believed that disorders are caused by a sensory regulation problem in the ear rather than viewing them as a disorder itself.

Past studies involving the Tomatis Method in the treatment of disorders include learning difficulties (Gilmore, 1999; Ross-Swain, 2007; Stutt, 1983), anxiety (du Plessis and Van Jaarsveld, 1988), disabled children (Kershner, Cummings, Clarke, Hadfield, and Kershner, 1990), children with autism (Neysmith-Roy, 2001) and music (du Plessis, *et al.*, 2001).

There are three important stages in the Tomatis Method. The first stage is called “Filtered Sound”, where the participants listened passively to recording of classical music and Gregorian chants that were filtered to exclude frequencies under 8,000 Hz. In this stage, “Tomatis believes that this experience is a duplication and a psychodynamic recapitulation of what the child hears and feels before birth” (Kershner, Cummings, Clarke, Hadfield, and Kershner, 1990, p.45). The second stage is called “Sonic Birth”. In this stage, the participants become “reborn” into the acoustic world by reintroducing frequencies between 125 and 8,000Hz heard through a liquid environment similar to the sounds heard by fetuses when they were still in the womb. In the final stage, which is called the “Active Phase”, the participants respond orally by repeating sounds heard in taped messages, and practiced reading and speaking aloud into the ear through a microphone.

One important feature of the Tomatis Method is the Electronic Ear (EE). This is a tool used in the first stage of the Tomatis Method. In simple terms, the Electronic Ear was developed in order to retrain the human ear to its full potential through listening to music that had been specially altered. There are four important elements to the Electronic Ear. First, the EE includes a set of filters that regulate sound so that the information is altered to focus evenly on the specific frequency of a good functioning ear. Second, an electronic gating mechanism (either to relax or tense the muscles) enables the ear to attune itself automatically and spontaneously for listening. Third, the EE controls and varies the balance of sound between the left and the right ear. And finally, the timing of sound reception can be changed to slow down the processing of information internally and awaken the individual to attend to incoming information (Thompson and Andrews, 2001).

The training process in the Tomatis Method includes the Audio-Psycho- Phonology Test, administered at the beginning and at the end of the Tomatis Listening Training Program. The Audio-Psycho-Phonology Listening Test measures the ability of the ear to listen and respond consciously to sound. This is different from auditory tests which measure hearing. There are six different measurements in the Audio-Psycho-Phonology Listening Test: (1) The air conduction curve, (2) The bone conduction curve, (3) Active Selective Listening, (4) The localization of the direction that the sound signal is sent from, (5) Audio-vocal control, and (6) Auditory lateralization (right or left). At the end of the listening assessment, a graph is produced in which how the left and the right ear listens are shown as a curve. The ideal listening curve is the one that rises between 125 and 1,000Hz, flattens between 1,000 and 3,000 Hz, and finally falls off between 3,000 and 8,000Hz. Any deviations from the ideal listening curve reveal neurosensory defenses that prevent the ear from receiving information from the cortex. The principal means of interpreting the results of the Audio-Psycho-Phonology Listening Test is that the blue line (the potential ability to listen) is over the red line (the effort used to listen).

## **2.2. How the Tomatis Method would help reading fluency**

The Tomatis Method is a way of training and re-tuning the ear to listen. It has been used to treat people suffering from auditory processing problems such as dyslexia, attention deficit disorder, and autism. But this application can also be used in language learning to help develop reading fluency because the learner would be trained to listen more actively to the different features of speech such as pronunciation, tone, and stress. During the Active Phase of the Tomatis Listening Training Program, the subject may be able to emulate the speech habits of native-speakers by being able to hear the subtle differences in phonemes, tone, and stress in their speech. The “Tomatis Laws” would come into effect because the stimulation of the ear allows the subject to recognize and produce perhaps new sounds that they were

unaware of before. The result would be a more fluent and native-like speech. Of course, vocabulary knowledge and the ability to instantly recognize and produce words read from a text would have to be taken into account in order for fluent reading to occur.

### **3. The study**

#### **3.1. Purpose of study**

This study takes a look at the possible application of the Tomatis Method to improve L2 reading fluency (particularly in reading English aloud) in a small sample of students from Taiwan. There are two major research questions in this study:

1. Which areas in English reading fluency can be improved with the Tomatis Method?
2. How might the Tomatis Method be used in the educational setting and who might benefit the most from its implementation?

#### **3.2. Participants**

The participants in the study consisted of eight female students from various departments in a college in Southern Taiwan. Their majors include English (2), Spanish (1), Japanese (1), French (1), International Business Administration (1), and Foreign Language Instruction (2). Participation in the study was voluntary.

#### **3.3. Instrument**

The main instrument used in this study consisted of a reading fluency test that was conducted at the beginning and at the end of the training program. This test was administered by the researchers of the study in which the participants had to read aloud into an audio recorder and record two short passages randomly selected from a TOEIC (Test of English for International Communication) preparation manual. After all the participants had finished, the audio recordings were made into electronic files and sent to three teachers from the Department of

English for scoring.

A holistic rating scale based on Shohamy (1985) was used to assess the speaking ability of the participants (see Appendix 1). The participants were assessed according to different criteria during the reading of the two passages which include fluency, tone, stress, pronunciation, and intelligibility. Once all the teachers have finished scoring the reading passages, their scores were collected and the mean score for each of the different criteria was calculated for each participant. The results of the pre-test and post-test scores were then analyzed for statistical significance.

### **3.4. Design and procedure – the Tomatis Listening Training Program**

The participants all volunteered to participate in this study. The participants were required to attend a total of 40 hours of training in the Tomatis Listening Training Program, which took place during the weekends on campus for five consecutive weeks in the fall semester. There were a total of 20 different training sessions (two hours each) arranged into morning and afternoon session each day (Saturday and Sunday).

During the first week (four sessions), the participants took part in the first stage of the Tomatis Method, the Filtered Sound stage. They listened to the specially prepared music through EE headphones connected to an audio machine. The participants were divided into two groups and they listened to the music in one of the two prearranged listening rooms. During the listening the participants were allowed to do homework, play cards or board games. They were not encouraged to talk to each other because talking produces sounds that can be picked up in the ear, lessening the effect of the Filtered Sound.

Then in the next six sessions (week 2 and first day of week 3), the participants took part in the second stage of the Tomatis Method called Sonic Birth. Again, the participants listened passively to the specially prepared music through the EE headphones in one of the two listening rooms.

Finally, the last 10 sessions of the Tomatis Listening Training Program constituted the Active Phase. In this stage, the participants took turns going into a prearranged individual room for oral practice. Each session of the oral practice was only 30 minutes long and the participants worked on one of two things. First, the participants listened to and repeated various English words and phrases through the microphone and the EE headphones. The second activity included reading textbook passages in English aloud into the microphone and listening to it through the EE headphones. These activities allow the ear to be more aware in the listening of the sounds in their speeches while developing more native-like fluency. For the participants who were waiting for their turn in the Active Phase, they remained in the listening rooms listening to the music. In all, the participants took part in 8 hours of Filtered Sound listening, 29.5 hours of Sonic Birth listening, and 2.5 hours of oral practice in the Active Phase.

### **3.5. Analysis**

A paired T-test of the pretest and posttest was used to evaluate whether the participant's speaking ability had significantly improved after their training in the Tomatis Listening Training Program. A paired T-test analysis was done for each of the categories that were observed in the reading aloud test; these include fluency, tone, stress, pronunciation, and intelligibility.

Five paired T-tests were used to analyze the participants' English reading fluency. A paired T-test was used for each category in the English reading fluency test assessed when the participants were asked to read aloud two short reading passages randomly selected from a TOIEC preparation manual. The categories included fluency, tone, stress, pronunciation, and intelligibility. In each category, the participants were scored based on a holistic scale that ranges from 1 to 7. This was done by three teachers from the Department of English.

One possible weakness in the study was the intra/inter-rater reliability, which was not

tested for the study. This could result in the possible inconsistencies in the scoring of the participants' speaking ability. However, to allow for the consistency in scoring, two measures were taken in this study. First, all the raters were briefed about the ratings and the criteria in the holistic scale by Shohamy (1985). This allows for more inter-rater consistency in the scoring. Second, the raters chosen for this study are all from the Department of English with at least three years of English teaching experience. Having experienced English teachers in this study to judge the pre-test and post-test scores allows for intra-rater consistency.

#### 4. Results

When comparing the means of each category in the reading fluency test, it was observed that the mean score was higher in the post-test than in the pre-test in every category (see Table 1). The categories with the biggest increases include fluency, stress, and intelligibility, which all had an increase of 0.75 points in the post-test over the mean score in the pre-test score. The category of tone had an increase of 0.63 while pronunciation had an increase of 0.50 over the pretest score.

Table 1. Results of Paired Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Fluency Pre-test	2.63	8	.518	.183
Fluency Post-test	3.38	8	.518	.183
Pair 2 Tone Pre-test	2.13	8	.354	.125
Tone Post-test	2.75	8	.463	.164
Pair 3 Stress Pre-test	2.13	8	.354	.125
Stress Post-test	2.88	8	.354	.125
Pair 4 Pronunciation Pre-test	2.63	8	.518	.183
Pronunciation Post-test	3.13	8	.354	.125
Pair 5 Intelligibility Pre-test	2.50	8	.535	.189
Intelligibility Post-test	3.25	8	.463	.164

Paired T-tests were conducted to evaluate whether the participants' L2 reading fluency ability improved after learning with the Tomatis Method. In the first pair (fluency), the mean score between the pre-test ( $M=2.63$ ,  $SD=0.518$ ) and the post-test ( $M=3.38$ ,  $SD=0.518$ ) was statistically significant,  $t(7) = -4.583$ ,  $p<0.05$ . In the second pair (tone), the mean score between the pre-test ( $M=2.13$ ,  $SD=0.354$ ) and the post-test ( $M=2.75$ ,  $SD=0.463$ ) yielded a statistical significance,  $t(7) = -3.416$ ,  $p<0.05$ . In the third pair (stress), the mean score between the pre-test ( $M=2.13$ ,  $SD=0.354$ ) and the post-test ( $M=2.88$ ,  $SD=0.354$ ) yielded a statistical significance,  $t(7) = -4.583$ ,  $p<0.05$ . In the fourth pair (pronunciation), the mean score between the pre-test ( $M=2.63$ ,  $SD=0.518$ ) and the post-test ( $M=3.13$ ,  $SD=0.354$ ) failed to yield a statistical significance,  $t(7) = -1.871$ ,  $p>0.05$ . In the final pair (intelligibility), the mean score between the pre-test ( $M=2.50$ ,  $SD=0.535$ ) and the post-test ( $M=3.25$ ,  $SD=0.463$ ) yielded a statistical significance,  $t(7) = -3.000$ ,  $p<0.05$ . The results of the paired T-test are summarized in Table 2 below.

Table 2. Results of Paired T-test

	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
<b>Fluency</b>	-.750	.463	.164	-1.137	-.363	-4.583	7	.003
<b>Tone</b>	-.625	.518	.183	-1.058	-.192	-3.416	7	.011
<b>Stress</b>	-.750	.463	.164	-1.137	-.363	-4.583	7	.003
<b>Pronunciation</b>	-.500	.756	.267	-1.132	.132	-1.871	7	.104
<b>Intelligibility</b>	-.750	.707	.250	-1.341	-.159	-3.000	7	.020

## **5. Discussion**

The Tomatis Method can be used to help learners become better tuned and more receptive to language listening. Although the training program provides practice for both listening and speaking, this study mainly focused on the effects of the Tomatis Method on L2 fluency in reading aloud. As evidenced by the results of the reading fluency pre-test and post-test, the Tomatis Method had a significant effect on the participants' ability to read aloud fluently, especially on fluency, tone, stress, and intelligibility.

However, we failed to find a significant effect for the participants' pronunciation. One reason for this might be because individual pronunciation is not something that can be easily corrected through computers or a machine in a short period of time. Corrections of differences in individual pronunciation need individual attention by a trained teacher and constant guidance is needed in order for the new changes to become a habit.

Thus, as we can see from the results of the pre-test and post-test, the Tomatis Method could be used to help the learner read aloud more fluently, with better tone and stress, which in turns increases intelligibility. According to Tomatis theory, the improvements in these areas were the results of an enhanced listening ability, which allowed the learner to improve their vocal ability. It was believed that a better communication skill can be developed through the ear. Based on these preliminary findings it can be concluded that the Tomatis Method has a huge potential for regular use in language learning, however, the following suggestions should be considered.

First of all, the Tomatis Method is not a method of teaching, but rather it is a method of training of the ear. We must understand that the stages of training in the Tomatis Method do not provide any explicit teachings or instructions for the English language study. It is simply a process which the students go through to help open up their ears for better reception of language learning. Although the students have ample practice in speaking during the "active

phase”, the activities are not meant to correct their pronunciation, but instead, to make them more aware of their flaws so that they can hear and correct their own mistakes when speaking. Therefore, the goal of the program is on active listening and listening awareness. One cannot expect to become fluent in English simply by going through the stages of the Tomatis Listening Training Program.

Second, the Tomatis Method is ideal for those with language difficulties, especially those who have high anxieties when it comes to learning a foreign language. Even though the Tomatis Method is commonly used to treat people with different disorders, in language learning, the Audio-Psycho-Listening Test can reveal hidden emotional or psychological barriers in students that prevent them from maximizing their language learning ability. Through these diagnostics the learner will better understand their learning difficulties and overcome them for more efficient learning. However, for more advanced learners or learners with low affective filters, the Tomatis Method may not be suitable for them as they are already capable of learning the language well on their own. Therefore, if the Tomatis Method is to be implemented in schools or universities, it should be done on a small scale, helping those who struggle the most in language learning.

Third, if the Tomatis Listening Training Program was to be adopted in schools, we may be able to extend the training to 50 hours to meet the requirements of individuals. Many of the participants in the study expressed that they enjoyed the Active Phase the most since they felt like they are working on improving their oral fluency. However, nearly all participants also wished they could have more practice sessions with the microphone. The current study was unable to provide more practice in the Active Phase due to limited space and resources available. If the Tomatis Listening Training Program was to be adopted and implemented in schools, then arrangements could be made to allow the learner to do up to 20 hours of oral practice (rather than 2.5 hours as in this study). If this was the case, the end result may probably be even better than the results obtained in this study.

If the three issues mentioned above were met, there is a strong potential that the Tomatis Method can be used successfully in language instruction. This will benefit those who have the greatest language difficulties by training their ear for more effective listening as well as lowering their anxiety in language learning at the same time. The Tomatis Method can be used with many languages so this would be something that could potentially benefit an entire school program with students from other language departments.

## **6. Concluding remarks and suggestions for future study**

The initial findings in this pilot study on the effects of Tomatis Method on L2 reading fluency in Taiwanese college students showed positive results. There was a significant improvement in the participants' speaking ability, especially in the areas of fluency, tone, stress, and intelligibility. In addition, the participants also developed better listening skills in which the ear was enhanced for better sound reception. It can be hypothesized that the increased listening and speaking ability may be due to the lowering of the Affective Filter. By going through the training program the participants probably felt more confident in language learning. According to Tomatis Theory, the participants had enhanced their ear and listening ability which allowed other parts of the body to be more receptive to communication. Whatever the reasons are, the participants are nevertheless more confident in their English ability.

One of the limitations of the study was the small sample (8 participants). Even though the students came from different departments and exhibited different English proficiency levels, it is recommended that future studies should be implemented with a larger group of participants to better represent the general population. In addition to the small sample in the study, the time involved in the training was also very short (40 hours), which may affect the accuracy of the data that were collected. Perhaps in the future a longitudinal study is required where we observe the participants for a year after they have completed the Tomatis Method.

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#### Appendix 1. Holistic Rating Scale for Speaking Test (Shohamy, 1985)

Rating	Interpretation
1	Unintelligible; No language Produced; No interaction possible
2	Hardly intelligible; Very poor language produced; Only simplest, fragmentary interaction possible

3	Clearly intelligible; Simple language produced; Interaction possible; Not articulate
4	Responsive in interaction; Slightly more sophisticated language produced; Consistent errors: but do not interfere with fluency; Strong MT interference (translated patterns, etc.)
5	Almost effortless in expression; Adequate in interaction; Errors: NOT consistent
6	Facility of expression; Comfortable, initiating in interaction; Sporadic mistakes
7	No limitation whatsoever; Near-native