How to Talk to Myself: Optimal Implementation for Developing Fluency in EFL Speaking Through Soliloquizing

Shang-En Huang1 · Yeu-Ting Liu2

Received: 8 September 2021 / Accepted: 24 February 2022 / Published online: 21 March 2022
© The Author(s) under exclusive licence to National Taiwan Normal University 2022

Abstract

“Soliloquizing” refers to the self-talk practice of a language learner through verbalizing thoughts using their target language. Through years of research, scholars have maintained that soliloquizing has the potential to promote language learners’ oral fluency in unscripted speech; nevertheless, empirical validation of soliloquizing has yet to be confirmed. The aims of the current study were two-fold: (1) to empirically establish the pedagogical efficacy of soliloquizing for promoting fluency in unscripted speech and to explore the most desirable implementation setting for this practice; and 2) to delve into second-language (L2) learners’ perceived attitudes towards and experience of soliloquizing. A total of 28 EFL college students with CEFR B1 English proficiency participated in a 4-week soliloquizing treatment under four conditions, i.e., [+ / − time pressure] × [+ / − restriction of fillers]. This L2 learners’ fluency, gleaned from the measure of pruned speech rate, was analyzed using paired sample t-tests and two-way ANOVA, while their attitudes were further investigated using questionnaires and interviews. This study showed that soliloquizing significantly enhanced EFL learners’ speaking fluency and attitude, and that an optimal soliloquizing setting was the one implemented with increasing time constraint. Based on the obtained quantitative and qualitative findings, desirable soliloquizing implementation settings are discussed.

摘要

自我對話練習(Soliloquizing)是一種語言學習者藉由自我對話學習表達自己想法的口語練習技巧。近年來，學者在評論此技巧時都宣稱此技巧可有效提升語言學習者口說流暢度。但是，迄今仍無充足的實證支持此論點。本研究希冀以實證檢驗此技巧提升口語流利度之效益與最佳操作模式，並探觸外語學習者對此技巧之態度與經驗。為此，本研究招募28名學習英語為外語之大

Extended author information available on the last page of the article
Introduction

In a large-scale study of 2300 people, Ecalle et al. (2021) established the causal nature of the links between decoding, fluency, and comprehension; notably, fluency was found to be a key predictor of comprehension outcomes. In this vein, Dewaele and Furnham (1999) noted that being able to “maintain fluency allows a speaker to complexify and monitor [the form of] their speech,” suggesting that fluency lays the foundation for other aspects of speech development, including speech complexity and accuracy. Kormos (2006) also observed that fluency contributes to many key areas of speech production, including speech conceptualization, formulation, and (form) monitoring. Accordingly, achieving speech fluency is not only “an ultimate goal” for L2 learners but also an ongoing focus of their language development (Hanzawa, 2021).

So, what exactly is fluency? Lennon (1990, 2000) maintained that fluency could be broadly perceived and defined as an all-round aspect of learners’ speaking ability. Since then, many language teachers have set students’ attainment of “fluency”—an overall language competence—as the ultimate goal of their teaching agenda. In addition to the broad perception of fluency, scholars have also attempted to define and discuss the percept of fluency through a narrower, “measurable” lens; these scholars suggested that fluency should be perceived as an “isolatable component of oral proficiency” (Lennon, 1990, p. 389). Such fluency is associated with and contributed to by learners’ rapidity and fluidity in retrieving lexical items while performing oral discourse (Lennon, 2000; Segalowitz, 2000). In this light, De Jong and Perfetti (2011) suggested that in the narrow sense of fluency, the “speed of access and control of linguistic forms become fluent only with much practice in speech production” (p. 534). Hence, many second-language (L2) scholars have posited that instructors should design pedagogical activities that are capable of promoting learners’ rapid and automatic retrieval of previously stored declarative knowledge in meaningful production contexts (De Jong & Perfetti, 2011; Suzuki et al., 2019). Among various pedagogical practices, some researchers have proposed that through repeated...
engagement with declarative knowledge in contexts, instructed (L2) learners could be induced to “incorporate[e] elements of declarative knowledge into broader pre-existing procedural rules” (Dekeyser, 2017, p. 17). Similarly, Gatbonton and Segalowitz (1988, 2005) maintained that learners’ automatization and fluency in speech can be attained through meaningful repetition of a particular practice task. Lambert et al.’s (2016) study that involved 32 EFL Japanese learners in oral repetitions empirically established the above view; they observed that “participants’ speech rate [a hallmark feature of fluency] improved markedly over the first three performances and then gradually until the fifth performance” (p. 188). Similarly, De Jong and Perfetti (2011) observed that the repetition group exhibited significant fluency gains for the materials practiced earlier, and that such gains also carried over to the contexts of new materials. Taken together, meaningful and contextualized repetition is valued in the literature on fluency training, as it stimulates the incorporation of declarative L2 knowledge into procedural rules in speech production, and leads to the promotion of fluency.

The 4/3/2 technique, originally proposed by Maurice (1983), was an exemplar practice implemented to enhance learners’ oral fluency through task repetition. This technique requires a speaker to deliver the same discourse to a conversational partner under three different time constraints; the first delivery lasts 4 min, the second 3 min, and the third 2 min. With contextualized practice and timed repetition, the 4/3/2 technique has shown benefits in promoting learners’ fluency in unscripted speech (Boers, 2014; De Jong & Perfetti, 2011; Nation, 1989). Despite the potency of the 4/3/2 technique for promoting learners’ oral fluency, it requires the participation of a partner or an instructor (see Tran & Saito, 2021) and hence is not suitable for learners’ individual practice beyond the classroom setting. Some instructors have thus started to promote another speaking competency training practice coined the “soliloquizing technique”—a training technique that is similar to the 4/3/2 activity, but without the need for an instructor or a partner on-site. Efromovich (2013) described such a practice as “shower talk,” as soliloquizing is suggested to be practiced in an environment without the effects of external elements (e.g., interlocutor, peer pressure, or teacher inspection). While soliloquizing, learners immerse themselves in a meaningful and contextualized self-created discourse by talking to themselves as if they are speaking in a conversation, discussing prompts in the form of a self-constructed dialog without a conversational partner. Scholars have urged learners—especially those foreign-language (FL) learners who do not have easy access to native-speaker input beyond the classroom setting—to employ the soliloquizing technique to develop their oral fluency in unscripted speech (Fan & Shou, 2011; Li & Zhou, 2001; Zhang, 2008, 2018). The above implementation features make the soliloquizing technique an ideal pedagogical practice for learners to develop their fluency beyond the classroom setting. Li and Zhou (2001) were the first pioneers to put forward seven implementation recommendations for the practice of soliloquizing (see the “Literature Review” for more details). Following Li and Zhou (2001), several scholars continued to stipulate desirable execution conditions for soliloquizing (Fan & Shou, 2011; Zhang, 2008, 2018). Although these scholars’ stipulations may differ in their wording, they are generally aligned with the seven guidelines proposed by Li and Zhou (2001). It is important to note that while most of the
guidelines provided by Li and Zhou are directly pertinent to teachers’ design of the soliloquizing materials, two of them—practicing soliloquizing “in good time” and inviting learners to constantly monitor the quality and (dis)fluent features of their speech—are the ones that are directly relevant to the learners’ practice and hence are under the learners’ control. Targeting these two learner-centered guidelines, this study set out to examine whether setting a time constraint (practicing soliloquizing in good time) and watching the use of fillers (monitoring the quality of their speech) could optimize the fluency gains resulting from soliloquizing.

Despite the endorsement of soliloquizing from the above scholars, existing research has mainly examined EFL learners’ attitude towards and perceptions of soliloquizing (e.g., Fan & Shou, 2011; Zhang, 2018). Empirical evidence establishing the pedagogical potency of the soliloquizing technique for promoting EFL learners’ oral fluency is still lacking. This study aims to fill the gap.

**Literature Review**

**Two Features of Fluency Training**

Existing research has explored the desirable elements to be included in oral activities designed to promote oral fluency. The 4/3/2 technique—as one pedagogical tool used to promote speech fluency—puts great emphasis on imposing increasing time constraint on the delivery of oral discourse. Interestingly, despite this, earlier research on the 4/3/2 technique did not directly probe the impact of imposing time pressure on promoting learners’ fluency. For instance, focusing on ESL learners, Nation (1989) and Arevart and Nation (1991) both explored whether the 4/3/2 activity would expedite learners’ retrieval processes and push them to convey their articulations in a more efficient fashion. Although both of these studies provided positive evidence supporting the 4/3/2 activity’s potency for promoting fluency, time pressure was not a variable under investigation. These studies therefore did not shed direct light on the role of time pressure in promoting learners’ fluency. It was not until Boers (2014) and Thai and Boers (2016) that scholars started to examine the importance of time pressure in the 4/3/2 activities. In these studies, they established the prominent role of time pressure by comparing ESL learners’ fluency after receiving fluency treatment with and without imposing time pressure on the learners (3/3/3 vs. 4/3/2 activities). Notable gains in fluency were only observed in the time-pressure group. Nonetheless, the difference in the complexity and accuracy of learners’ production remained insignificant for both groups. Recently, Tran and Saito (2021) also established the pedagogical necessity of increasing time constraint when implementing the 4/3/2 activity; importantly, they observed that their EFL learners’ fluency gains were enhanced when they were instructed to also pay attention to the forms of their production while performing the 4/3/2 activity. The above findings entail that time pressure is a key pedagogical tool for promoting fluency, but that it may not promote the development of other aspects of L2 speech such as complexity and accuracy.
Another fluency feature worth investigating is the use of fillers in speech. Fillers, which are monosyllabic sounds that fill the pauses in spontaneous speech, are natural products of oral communication. Whether fillers should be constrained or not in order to promote oral fluency has not been unequivocally resolved in the existing (dis)fluency literature. For instance, seeing fillers through a positive lens, Kosmala and Morgenstern (2019) maintained that the use of fillers allows speakers to have more time to plan their utterance and to structure upcoming ideas. Similarly, Clark and Fox Tree (2002) posited that fillers such as “uh” and “um” represent speakers’ monitored reaction to an illocutionary act while maintaining the conversation flow as they retrieve lexical tokens. Peltonen (2017) also argues that fillers “allow learners more processing time and reduce time spent in silence while processing, therefore contributing to fluency” (Peltonen, 2017, p. 2). It is for this reason that fillers have been viewed by the above scholars as stalling mechanisms that speakers use to cope with the time pressure “while avoiding silent [or unfilled] pauses” (p. 3).

Although the contention that fillers may positively contribute to fluency by “reducing the time spent in silence while processing” (Peltonen, 2017, p. 2) is intuitively appealing, studies have also found that fillers used by disfluent speakers are often accompanied by fillers, pauses and/or prolongations of the preceding word (Arnold et al., 2007; Corley et al., 2007), indicating that fillers delay, rather than expedite, the delivery of spontaneous speech. Bortfeld et al. (2001) contended that if fillers are used strategically to facilitate the illocutionary act and to expedite or maintain the flow of spontaneous speech, we would expect to see more fillers between syntactic or intonational phrases (as signals for the onset of a meaning unit) rather than within these phrases. But this was not the case. Analyzing 192,000 words uttered by 48 pairs of speakers of different age groups and different fluency statuses, Bortfeld et al. (2001) observed that significantly more fillers were evidenced within syntactic or intonational phrases in their participants’ speech data; in this case, overuse of fillers—whether consciously or unconsciously—may disrupt speakers’ trend of thoughts (before a complete phrase is uttered) and hence lead to frequent breakdown of utterance while speaking. Additionally, fillers—in particular those uttered within phrases—would shorten the maximum time that a speaker can sustain the utterance during only one (deep) breath (also known as the maximum phonation time); longer phonation time was taken as an indication of better speaking fluency (see Doe, 2021). Last but not least, Bortfeld et al. (2001) found that restarts, repeats, and fillers were more significantly evidenced in cognitively declined older speakers than in younger fluent speakers. This explains, at least in part, why some scholars use “number of fillers” as an indicator of oral (dis)fluency, where higher rates of fillers are considered a type of dysfluency (e.g., Bosker et al., 2013; De Jong, 2016; Skehan et al., 2016).

Accordingly, fillers, which often occur within syntactic or intonational phrases, may not unequivocally be a sign of fluency, and higher rates of fillers may be “not only a symptom of word-finding problem but also a display that solicits help with the problem” (Bortfeld et al., 2001, p. 138). The equivocal status of fillers has led some scholars to exclude extensive or long fillers when analyzing speaking fluency and/or to treat them as “noise” similar to extensive silence (e.g., Tran & Saito, 2021). Accordingly, the jury is still out on whether the use of fillers is a “necessary
evil” in techniques promoting fluency; the relationship of fillers and speaking fluency warrants further empirical validation.

Together, although fluency studies—albeit still limited in number—have shown that time pressure is the key to the development of fluency; little is known about whether other remedial instruction in a fluency training program (such as constraint on the use of fillers) would complement the time pressure element and hence leverage learners’ fluency gains. Therefore, it would be insightful to delve into whether asking learners to monitor their use of fillers—a formal aspect of their production, which, as reviewed above, often occur within phrases—would optimize learners’ fluency gains after applying the soliloquizing approach.

**Empirical Research on Soliloquizing**

Soliloquizing, also known as self-talk, was first proposed by Li and Zhou (2001) as a self-practice method to promote Chinese EFL learners’ oral fluency. Hitherto, the soliloquizing literature has mostly been confined to either theoretical stipulations or investigations of learners’ perceptions of soliloquizing.

For instance, Zhang (2008) described soliloquizing as a practice that is capable of creating an “authentic after-class oral English environment” to improve foreign language (FL) learners’ fluency in unscripted speech. Both Zhang (2008) and Li and Zhou (2001) stressed that FL learners do not need to rely on others (teachers or peers) while practicing soliloquizing because they just need to engage in conversation with themselves. In this regard, soliloquizing allows FL learners to practice imaginary speech production in a psychologically safe environment in which they converse with themselves freely without the restrictions of external elements such as environment, interlocutors, and instructions.

Addressing how soliloquizing should be implemented, Li and Zhou (2001) put forward seven suggestions for an effective soliloquizing session: (1) creating ample, individualized speech production opportunities; (2) providing sufficient opportunities for learners to imitate; (3) producing repetitive soliloquizing in good time; (4) selecting level-appropriate speaking materials mainly consisting of familiar topics; (5) practicing particular patterns in a consistent manner; (6) allowing learners to practice and acquire extralinguistic features such as body language, gestures, and expressions while implementing the soliloquizing technique; and (7) encouraging learners to constantly assess and monitor the quality of their speech. These suggestions have provided general guidelines for soliloquizing. Li and Zhou (2001) urged practitioners to consider incorporating some, if not all, of the above guidelines when designing and implementing a soliloquizing activity. Following Li and Zhou (2001), several other scholars have also proposed guidelines for the practice for soliloquizing (Fan & Shou, 2011; Zhang, 2008, 2018); nonetheless, these scholars’ theoretical stipulations generally follow those proposed by Li and Zhou (2001).

In spite of the theoretical stipulations for soliloquizing, empirical examinations of learners’ fluency gains are still lacking. Existing soliloquizing studies, albeit still very limited in number, focus on learners’ perceptions of the soliloquizing technique. For instance, analyzing the questionnaire data collected from 50 Chinese EFL
learners, Fan and Shou (2011) postulated that Chinese speakers’ culture-inherited apprehension in speaking may be eased or lessened through soliloquizing because there is no need to engage in real-world conversations with others; importantly, the questionnaire data also revealed learners’ positive self-perceptions of their improvement in speaking (see also Li & Zhou, 2001; Timina, 2015). Despite the insights of the aforementioned perception-based studies, empirical evidence that establishes the pedagogical potency of soliloquizing for promoting fluency gain in the L2 is still lacking. This study therefore sets out to explore whether soliloquizing is a beneficial technique to promote L2 learners’ oral fluency in unscripted speech, and if so, the optimal implementation of soliloquizing. To this end, three research questions were explored:

RQ1: Can soliloquizing effectively improve L2 learners’ oral fluency in unscripted speech over time?

RQ2: If so, which soliloquizing implementation better promotes their fluency: imposing time constraint and/or restriction of fillers?

RQ3: What are L2 learners’ reported experience and perceived difference in their English speaking after soliloquizing?

Methodology

Participants

A total of 28 EFL non-English-major undergraduates (5 males and 23 females) were recruited from several universities in northern Taiwan to participate in this study. The participants’ ages ranged from 18 to 21 (\(M_{age} = 19.03\) years). These participants had all studied English as a foreign language in the classroom context for 12 years at the time of the study. None of them had any experience of studying abroad at the time of the study. Except for their 2-h Freshman English class every week during the first two years at college, none of these participants had had any exposure to English beyond the classroom setting. To ensure that the participants’ proficiency profile was not a modulating factor of their performance in this study, we only recruited participants whose overall and speaking proficiencies in English were both at the CEFR B1 level; this was ensured by their performance on a standardized language proficiency test such as TOEFL or IELTS. These participants’ performance in TOEFL or IELTS and their performance in the speaking subsection all fell in the range of the CEFR B1 level. In this regard, these participants were thus comparable in terms of their overall English proficiency and their speaking proficiency.

Design and Materials

This study employed a 2 × 2 factorial experimental design that manipulated the two fluency elements, that is, time constraint (TC) and restriction of fillers (RF), as the independent variables. To examine how filler usage affects fluency outcome, half of
the participants practiced soliloquizing with permission to use fillers such as “Uh” and “Um” when running out of words while soliloquizing, and the other half were instructed to restrict themselves from using fillers while practicing with the soliloquizing technique.

To further investigate how practicing soliloquizing with time pressure affects their fluency outcomes, these two groups were further divided into two subgroups: those who practiced soliloquizing with and without increasing time constraint. Those who had to speak with a time constraint were required to speak about a given topic for 4 min; next, they had to give the same talk again in 3 min, and finally, in 2 min (4/3/2 time-constrained practice); those assigned to the subgroup without an increasing time constraint performed soliloquizing without having to worry about an increasing time constraint throughout the three rounds of practice. In other words, all three rounds of soliloquizing were completed in 4 min for the subgroup without an increasing time constraint. According to the above design, four soliloquizing implementation conditions resulted in: (+RF, +TC), (+RF, −TC), (−RF, +TC), and (−RF, −TC). Since the participants were homogeneous in terms of age, overall proficiency, speaking proficiency, and EFL experience, they were randomly assigned to one of the four conditions (Fig. 1).

The treatment for the participants, irrespective of their treatment assignment, spanned 4 weeks; all participants practiced soliloquizing as homework four times a

---

**Fig. 1** Visual schematization of the research design

© Springer
week, with each session lasting 11–14 min. In each daily session, all participants, irrespective of their group assignment, soliloquized on the same topic in three repetitions during each day’s practice, with a 1-min break between each repetition; this methodological requirement was based on the findings of Lambert et al. (2016), who observed that three repetitions of the same speaking practice per session led to the greatest fluency gains. All participants underwent 16 sessions in total.

In each daily soliloquizing session, all participants were given the same topic prompts through daily emails. Before each soliloquizing session, the participants would receive the practice prompt for each session, including the topic (which took the form of a question) and relevant keywords which helped them plan and organize their speech content while performing soliloquizing. An example of the prompts given is as follows:

Q: Can you introduce me to the college you are attending?
**Keywords:** Location; your major; history; activities; specialties.

Efforts were made to ensure that the prompt questions were those that the participants of this proficiency level could readily talk about and were familiar with. To this end, we administered a pilot test to a similar population (consisting of 8 people) prior to this study; through the interview response of these pilot participants, we selected the topics that were deemed helpful and familiar by all of these pilot participants. These topics were all ones that these pilot participants could readily talk about, as gleaned from their responses to the item probing their perceptions of the familiarity of the selected topics (with an average rating of 4.03 out of 5 on a 5-point Likert scale). After the topics were decided, the keywords for each topic were hand-picked by two experienced EFL teachers who had been teaching this proficiency level for more than 10 years, based on these pilot participants’ oral responses to each prompt question. Throughout the above process, the keywords and prompts provided to the participants were thus appropriate in terms of familiarity and difficulty for the participants of this study.

While soliloquizing, all participants were explicitly instructed to ask/answer themselves questions without too much thinking, using the given keywords or prompts provided by the researcher. All participants were instructed to film their soliloquizing sessions to leave accountable data for the researchers to monitor their execution and hence to ensure that all participants were performing soliloquizing according to their assigned conditions. The researchers inspected the recordings of all participants’ practices after each session and provided them with an immediate gentle reminder (before the next session) if they did not satisfy their condition requirements. Notably, after recording their own performance, the participants uploaded their videos to a designated Facebook group based on their assigned conditions; the participants were instructed to observe at least one uploaded video from

---

1 The time varied slightly depending on whether the participants were assigned to the soliloquizing conditions with or without time pressure.
their cohort (of the same condition) every day, thus allowing them a chance to imi-
tate others or to revise their own performance.

Overall, the soliloquizing implementation in this study is aligned with and based
on the seven guidelines prescribed by Li and Zhou (2001). Notably, the video
reviewing and imitation activity (that each participant had to perform) at the end
of each session was particularly motivated by the second, sixth, and seventh recom-
mendations, namely, (2) providing sufficient opportunities for learners to imitate;
(6) allowing learners to practice and acquire extralinguistic features such as body
language, gestures, and expressions while implementing the soliloquizing technique;
and (7) encouraging learners to constantly assess and monitor the quality of their
speech. While video recording reminds participants that they are engaging in a mul-
timodal task, they would be more inclined to practice extralinguistic features when
soliloquizing. Furthermore, participants can monitor the quality of their own perfor-
mances through the recordings and are given opportunities to imitate or learn from
their peers through observing the uploaded videos of their fellow participants.

Instruments

This study drew on the fluency measurement of pruned speech rate (PSR) to gauge
the participants’ difference in fluency after soliloquizing (De Jong, 2016; Huensch
& Tracy-Ventura, 2017). While calculating the PSR, some researchers prune away
the “filled pauses, reformulations, replacements, false starts, and repetitions” (Bui
et al., 2019, p. 5) of the recorded speech data and then calculate the syllables per
minute of the remaining data (De Jong, 2018). It is worth noting that while counting
the PSR, this study followed Engelhardt et al.’s (2011) view that filled pauses (i.e.,
um, uh, and er) and silent pauses that do not last for longer than one second are often
ordinary prosodic pauses. Following this view, this study only pruned away filled
pauses and silent pauses that lasted for longer than 1 s because they are better disflu-
cency indicators. An example of the above pruning criterion is presented below:

\[
(\text{false start}) \quad \text{When} \quad (\text{repetition}) \quad (\text{long filled pauses}) \quad \text{you start the illustration?}
\]

Based on the above example, it could be seen that through the aforementioned
PSR data criterion, only 5 words could be considered when calculating the number
of syllables produced per minute by this particular participant.

To establish whether soliloquizing is capable of promoting the participants’
fluency in speaking and to probe the optimal implementation setting for solilo-
quizing, all the participants participated in a practice test and an official pre-
test (before the treatment) and one posttest (after the treatment); in these three
tests, the participants were asked to give a 4-min soliloquy on a given issue (that
should be familiar to them but was not used during the treatment) and their PSR
in this 4-min unscripted speech was calculated and cross-compared. The prac-
tice test was carried out to help participants familiarize themselves with the solilo-
quizing technique, and the official pretest was administered to establish the
baseline prior to the study and to ensure the participants’ initial fluency. The
participants’ fluency gain was inferred based on the difference in the official
pretest and the posttest (please see Table 1 in the “Results”). To further ensure that the affecting variable was the different implementation possibilities of the soliloquizing technique, and that the participants’ gains were mainly attributable to the affecting variable, extra effort was made to ensure that the participants did not receive any additional or extraordinary input during the treatment, both within and beyond the classroom setting, during the time of the study. In this regard, any diachronic within-group fluency gain, as determined by comparing their PSRs over time, could be attributed to the treatment they received—a methodological view also adopted by Liu and Tseng (2019).

Besides PSR, questionnaires and interviews were administered to all participants. They were designed to elicit the participants’ experiences and perceptions (e.g., attitude, practicality, preferability) of soliloquizing. The questionnaire consisted of 10 5-point Likert scale items (1 = completely disagree, 5 = completely agree), which required the participants to evaluate their perceptions of the current soliloquizing design, materials, and instructions. The retrospective interview attempted to tap into the learners’ cognition while soliloquizing. The interview consisted of three questions which probed the participants’ suggestions for soliloquizing as well as examining their English training habits and oral production after the treatment.

**Procedures**

All participants took part in a 4-min soliloquizing pretest at the onset of the soliloquizing treatment. After the participants started to receive the treatment, they performed soliloquizing based on the instruction given to them for their assigned conditions (with increasing time constraint or not; with permission to use fillers or not). All participants had to practice soliloquizing four times a week (with similar daily intervals), which resulted in 16 practice sessions during the 4-week treatment. After the 4-week soliloquizing treatment, the participants completed an immediate posttest; they then completed a post-study questionnaire and a retrospective interview individually with the researchers 1 week after the treatment.

**Table 1**  Paired sample *t*-test on pretest and posttest PSR

| Tests and conditions | Pretest | Posttest | Diachronic gain b/n pretest and posttest | *t* (upper tail) | p  |
|---------------------|---------|----------|------------------------------------------|------------------|----|
|                     |         |          |                                          |                  |    |
| All Conditions      | 105.32  | 121.07   | 15.75                                    | 5.290            | <.001* |
| (−RF, −TC)          | 105.64  | 117.39   | 11.75                                    | 2.268            | 0.003* |
| (−RF, +TC)          | 99.71   | 126.92   | 27.211                                   | 3.387            | 0.007* |
| (RF, −TC)           | 110.21  | 118.82   | 8.61                                     | 1.763            | 0.064 |
| (+RF, +TC)          | 105.71  | 121.14   | 15.43                                    | 4.598            | 0.001* |

*p* < 0.05
Data Analysis

Pretest and posttest data collected through PSR were analyzed utilizing paired sample t-tests and two-way ANOVA. The Likert scale questions in the questionnaires were inspected alongside the retrospective interviews, where emerged tokens were tallied, and were later utilized to provide explanatory accounts of the obtained findings.

Results

Homogeneity Test

To ensure that participants all started with homogeneous speaking fluency prior to receiving the treatment of this study, besides the confirmation of standardized test scores, this study analyzed the participants’ pretest PSR between the four assigned conditions (groups) through a one-way ANOVA. The participants’ pretest PSR was collected before the soliloquizing treatment, which therefore shed light on their initial speaking fluency. This analysis did not detect a significant between-group difference in the participants’ pretest PSR ($F = 0.362, p = 0.781$). This finding suggests that prior to the treatment, the participants had no significant difference in their speaking fluency. In this regard, any between-group difference in the participants’ fluency could be mainly attributed to the different treatment conditions of this study.

The t-Test Results

Paired sample t-test results between pretest and posttest PSR of all participants ($N = 28$) and the four soliloquizing conditions are displayed in Table 1. As seen in Table 1 below, the posttest PSR of all participants ($M = 121.07, SD = 23.08$) significantly improved, irrespective of the assigned conditions, as compared to the pretest ($M = 105.32, SD = 18.26; p < 0.001$).

The finding based on this preliminary analysis suggests that the practice of soliloquizing, without any extra implementation involved, had a significant positive effect on the participants’ oral fluency. Based on this finding, empirical evidence for the effectiveness of soliloquizing mentioned by Li and Zhou (2001) is provided in the current research. As the general improvement of soliloquizing is manifested, the following ANOVA analysis provides insights into which implementation in the current study led to the greatest gains in speaking fluency.

ANOVA

A two-way ANOVA with factors of RF and TC was carried out on the participants’ pretest and posttest difference in PSR. Table 2 below reports the two-way ANOVA results, where a marginal significance in the main effect of time constraint with a
medium to large effect size could be observed ($F=3.928$, $p=0.059$, $\eta^2 = 0.129$). The analysis did not detect any significant interactions between the two factors, leaving the main effect TC as the only significant effect (see Fig. 2 below).

The ANOVA and the $t$-test results collectively showed that the participants’ PSR significantly increased after soliloquizing, hence providing the first empirical evidence for fluency gains. Importantly, the participants had the tendency to show greater improvements in fluency when practicing soliloquizing with time constraints, and that the use of fillers (or the lack thereof) did not exert a significant impact on their fluency differences. The marginal main effect of TC suggests that the most desired soliloquizing setting for fluency improvements would be the one practiced under time constraint, which is in line with past fluency studies (De Jong & Perfetti, 2011; Thai & Boers, 2016). On the other hand, since there was no significance in the effect of restriction of fillers, it is reasonable to infer that there was very

| Table 2 Two-way ANOVA Results on Differences in PSR |
|-----------------|---------|------|-----------|-------|
|                | Df     | MS   | $F$       | $p$   |
| TC             | 1       | 869.1| 3.928     | 0.059 |
| RF             | 1       | 390.0| 1.763     | 0.197 |
| TC×RF          | 1       | 130.7| 0.591     | 0.450 |

Fig. 2 Interaction Plot on Factors of RF and TC
limited impact of the intentional use or restriction of fillers on participants’ fluency attainment.

**Questionnaire**

Table 3 below displays the results of the questionnaire with 10 Likert scale items completed 1 week after the treatment. Validated by an acceptable Cronbach’s alpha ($r = 0.735$), this questionnaire was shown to be valid in design.

As can be seen in Table 3, the participants’ responses reflected high agreement with items 1, 3, 4, 6, 7, 8, 9, and 10 (average score > 4), which is suggestive of their positive perceptions of the pedagogical potency of soliloquizing. Specifically, they all highly agreed that the instructions of soliloquizing were easy and clear to follow (item #1); soliloquizing is suitable for individual practice (item #3); asking themselves questions in an interviewer’s position allows them to produce language more fluently, as compared to speaking solely as a speaker (item #4); reviewing other learners’ practice videos allows them to better reflect on their practices and improvement (item #6); the daily training materials were easy to refer to in terms of background knowledge (item #7); the daily training materials were level-appropriate (item #8); and they found it easier to produce speech utilizing extralinguistic features like gestures, facial expressions, and body language (item #9). The participants’ consistent positive responses suggest that the current soliloquizing design and its practicality were recognized and appreciated by the participants. Additionally, when asked if participants would recommend this technique to a friend, a high score of 4.56 was reported (item #10), which reflected their approval of soliloquizing.

**Interview**

Retrospective interviews were conducted individually with all participants in their first language, Mandarin Chinese. Three of the most recurring answered themes were noted and are discussed vis-à-vis each interview question.

**Question 1: Suggestions for Soliloquizing**

The most repeated answer (40% of the interviewees) in question 1 (see Table 4) reveals that participants enjoyed soliloquizing with non-repetitive themes in the practice prompts (e.g., “The soliloquizing practice would be more intriguing if the prompts could be thematically-different”). Aligned with this was the third most emergent suggestion (27% of the interviewees): I hope the prompts could be more conceptually diverse (e.g., “I wish that the prompts could be conceptually diversified to keep the practice interesting, for example, there could be topics about environmental issues”). Although the assigned topics were closely related to the participants’ background knowledge, the participants felt that a greater diversity of topics—such as themes and concepts—would engage them more. The second most emergent response to question 1 (33% of the interviewees) indicates that the participants valued some feedback from the instructor (i.e., immediate or delayed and/or
| Items                                                                 | Results                                                                 |
|----------------------------------------------------------------------|-------------------------------------------------------------------------|
|                                                                      | Cohorts:                                                               |
|                                                                      | (+ RF, − TC) | (− RF, + TC) | (+ RF, + TC) | (− RF, TC) |
| 1. The instructions of Soliloquizing were easy and clear to follow   | M 4          | M 4.57       | M 4.28       | M 4.28     |
|                                                                      | SD 0.57      | SD 0.53      | SD 0.75      | SD 1.11    |
| 2. During the 4-week treatment, the soliloquizing technique always   | M 3.71       | M 3.71       | M 3.42       | M 3.85     |
| kept me interested                                                   | SD 0.75      | SD 0.95      | SD 0.78      | SD 0.89    |
| 3. Soliloquizing is suitable for college students to practice their   | M 4.28       | M 4.71       | M 4.28       | M 4.71     |
| speaking skills individually                                          | SD 0.48      | SD 0.48      | SD 0.48      | SD 0.48    |
| 4. Compared to simply speaking in a speaker’s position, asking       | M 3.71       | M 4          | M 4          | M 4.37     |
| yourself questions in an interviewer’s position in time allowed you  | SD 0.48      | SD 0.81      | SD 1.15      | SD 0.75    |
| to produce language more fluently                                    |              |              |              |            |
| 5. Compared to practicing speaking with others, you prefer to        | M 3.57       | M 4          | M 3.28       | M 3        |
| practice the soliloquizing technique alone                           | SD 1.13      | SD 0.81      | SD 1.38      | SD 1.52    |
| 6. By reviewing (other people’s practice) videos posted on the       | M 4.42       | M 4.14       | M 4          | M 4        |
| Facebook group, you were able to reflect on your own practices and   | SD 0.78      | SD 0.89      | SD 1.41      | SD 0.57    |
| improve                                                              |              |              |              |            |
| 7. The daily training materials were easy to refer to in terms of    | M 4          | M 4.28       | M 3.57       | M 4.28     |
| background knowledge                                                | SD 0.81      | SD 0.75      | SD 0.97      | SD 0.95    |
| 8. The daily training materials were appropriate for your English    | M 4.28       | M 4.28       | M 4.42       | M 4.42     |
| proficiency, as they were neither too hard nor too easy              | SD 0.75      | SD 0.95      | SD 0.53      | SD 0.53    |
| 9. It was easier to produce speech utilizing extralinguistic features| M 4.71       | M 4.85       | M 4.14       | M 4.14     |
| like gestures, facial expressions, and body language                 | SD 0.75      | SD 0.37      | SD 0.69      | SD 0.89    |
| 10. You would recommend this technique to a friend                   | M 4.85       | M 4.42       | M 4.42       | M 4.57     |
|                                                                      | SD 0.75      | SD 0.53      | SD 0.53      | SD 0.78    |
corrective or responsive) when practicing soliloquizing, and that they felt that they could learn more from such feedback (e.g., “I hope that there could be feedback provided so that we could know if we improved or not and if there was something wrong about our speech”).

**Question 2: Difference in English Practice Patterns After the Treatment**

This question was designed in the hope of discovering differences in how participants practiced English before and after soliloquizing (Table 5).

Of the participants, 67% reported that they found some difference in their English self-improvement patterns before and after (e.g., “I used to talk to myself in English, so there might be some difference but not too obvious,” and “I did not have habitual English practice patterns before the treatment and I did not gain new ones, so there is no big difference”). Yet, some participants mentioned they did not have a habit of practicing speaking English before the treatment nor did they engage in new practice habits after. This finding suggested that for most participants, the implementation of soliloquizing had not yet encouraged a different English practice pattern, despite the self-perceived gain arising from soliloquizing. Nevertheless, 16% of the participants did mention managing to use English more often in daily life (e.g., “I began to think of how to use the daily English input I encountered, and began to take every encounter with English as a live application rehearsal”) and unintentionally soliloquizing to themselves in English (17% of the participants; e.g., “I began to talk to myself in English subconsciously and my thoughts when utilizing English became similar to the self-interviewing style of soliloquizing”). These answers suggest that soliloquizing encouraged some participants to utilize English more often in their daily life, intentionally or unintentionally, with soliloquizing or using other self-improving methods.

**Table 4** Interview question 1 most emergent answers

| What suggestions do you have for soliloquizing? | Percentage |
|-----------------------------------------------|------------|
| #1: Hope the themes for the practice prompts do not repeat | 40%        |
| #2: Hope there is opportunity for feedback and/or assessment | 33%        |
| #3: Hope there could be more conceptually-diversified topics | 27%        |

**Table 5** Interview question 2 most emergent answers

| Was there a difference in your English self-improvement pattern after the 4-week soliloquizing training? | Percentage |
|---------------------------------------------------------------------------------------------------------|------------|
| If so, what was it?                                                                                      |            |
| #1: Some difference (no self-improvement practice in the first place)                                   | 67%        |
| #2: Used English more often in daily life (as a type of practice)                                       | 17%        |
| #3: Unintentionally talks to themselves in an English Soliloquizing manner in everyday scenarios         | 16%        |
Question 3: Self-Perceived Differences in Their Speaking After the Treatment

The third question further probed learners’ self-perception of the nature of the difference in their speaking, asking them to self-monitor the differences in their speech production processes after soliloquizing (Table 6).

Nearly 40% of the participants indicated that they became more intuitive and rapid when utilizing English to produce speech (e.g., “My thinking time before speaking has decreased, and I could speak English more intuitively”). The second item, mentioned by 32% of the participants, was that they observed less translation when utilizing English to articulate, as they reported being better at “thinking English with English” (e.g., “I no longer formed thoughts in Mandarin then translated them into English; I started thinking English with English”). Relevantly, 30% of the participants pointed out that they started to develop thoughts starting from individual English keywords (key-concepts), and formulating articulation utilizing these keywords as thematic prompts (e.g., “When I was using English, I applied different keywords as subtopics, which guided my train of thought”).

Other interesting findings

Table 7 below demonstrates a list of participants’ reports in question 3 that did not stand out in quantity, yet are worth discussing.

The most interesting comment comes from four participants who reported that due to the repeated practice of soliloquizing, they were able to form a lexicon of commonly used words that could be easily accessed for fast lexical retrieval (e.g., “Repeated practicing soliloquizing allowed me to form a word bank of frequently used words which I could retrieve faster…”; interestingly, this was mainly found in

| Percentage |
|------------|-------------------|
| #1: Became more intuitive and rapid when producing articulation | 38% |
| #2: Used less translation in production (less translation from Chinese to English, more speaking English while formulating speech with English) | 32% |
| #3: Started to form speech concepts based on English keywords that served as themes | 30% |

Table 7 Interview question 3 honorable comments

| Number of participants |
|------------------------|
| #1: A “fast-retrieval” lexicon was created, which led to faster retrieval of speech vocabulary | 4 |
| #2: Generate articulation through direct intentions (top-down) rather than build up thoughts compiling words and phrases (bottom-up) | 3 |
| #3: Speech production became more colloquial, and less complex in vocabulary and grammar | 3 |
the cohorts that practiced soliloquizing with a time constraint). These participants’ creation of a “fast-retrieval” lexicon is definitely a useful strategy for L2 learners when they are required to produce fluent L2 speech.

Additionally, three participants pointed out that they began to produce L2 speech focusing on the conceptual keywords underlying their intention (rather than on individual discrete lexical items) and that this strategy allowed them to directly draw on procedural knowledge for articulation formulation in a “top-down” fashion, which was the opposite of their earlier bottom-up articulation formulation using declarative knowledge (e.g., “I used to compose my speech with fragments of English; now I focus on addressing my intentions intuitively, and the words just fill in automatically”).

Lastly, three participants maintained that their speech production became more colloquial (e.g., “Despite speaking faster and more intuitively, I became more colloquial, not focusing as much on grammar and vocabulary”). They further pointed out that their speech production after soliloquizing might have become less complex in vocabulary and grammar as their fluency increased. This finding aligned with Thai and Boers (2016) and is a phenomenon coined the trade-off effect, as posited by Skehan and Foster (1997, p. 185).

Discussion

Pedagogical Potency of Soliloquizing

This study has established the effect of soliloquizing on oral fluency improvement by attaining significant manifests in the participants’ pretest and posttest difference after 4 weeks of soliloquizing practice. The participants’ speaking fluency improvement in this study has provided the first empirical evidence endorsing the previously theoretical postulated usefulness of soliloquizing noted in Li and Zhou (2001) and Zhang (2018). Additionally, participants’ responses to the questionnaires and interviews have shed light on their perceptions of the current soliloquizing instructions. As seen in Table 3, the questionnaire showed that the participants were generally satisfied and strongly agreed that soliloquizing was a useful fluency training technique (with most of their ratings higher than 4 on a 5-point Likert scale) and that they would recommend it to their friends. This agreement on the practicability and preferability of soliloquizing is in line with the questionnaire administered by Li and Zhou (2001), where 64% of 354 college students who completed the questionnaire on soliloquizing reported their preference for the technique. Notably, the participants’ responses to the third interview question (i.e., self-perceived differences in their speaking after the treatment; see Table 6) indicates that the participants seemed to be better able to retrieve lexical items without the mediation of their L1. The participants’ maintenance of intuitive and rapid L2 speech without having to fall back on their L1 also resonates with the notion of proceduralization mentioned in De Jong and Perfetti (2011). Furthermore, with the individualized, contextualized, and repetitively produced nature of soliloquizing leading to significant improvement in the participants’ speaking fluency, soliloquizing is a pedagogically potent technique.
that could be employed in the L2 classroom if the goal is to enhance learners’ fluency through meaningful and repetitive production tasks (see Suzuki et al., 2019; Dekeyser, 2017).

**Optimal Soliloquizing Implementational Setting**

Of the two possible soliloquizing implementation options—imposing a time constraint and restricting the use of fillers—only the former significantly promoted the participants’ fluency gains in unscripted speech, as gleaned from the two-way ANOVA (Table 2). While practicing soliloquizing with (increasing) time constraint, participants’ speaking fluency significantly improved through time-pressured soliloquizing training. As seen in Table 1, the participants’ best and second-best diachronic fluency gains were all observed under the conditions where they had to perform soliloquizing with time constraint (i.e., [−RF, +TC]: 27.21 vs. [+RF, +TC]: 15.43). This finding, which corroborates the key role of time pressure in leveraging the pedagogical potency of soliloquizing, is in line with De Jong and Perfetti (2011), in which time constraint was a core feature that led to the success of the 4/3/2 technique in fluency improvement.

In contrast to the manifest impact of time pressure on soliloquizing, as seen in Table 1, the observation that the participants’ diachronic fluency gain in the (+RF, −TC) condition (8.61) was even worse than their counterparts in the (−RF, −TC) condition² (11.75) implies that this additional request to ask the participants to monitor their use of fillers disrupted rather than facilitated their fluency in spontaneous speech. Further affirmative evidence for the disruptive effect of constraining the use of fillers comes from the observation that the participants’ fluency gain in the (−RF, +TC) condition (27.21) was even better than the gain under the (+RF, +TC) condition (15.43); this observation indicates that not having to constrain the participants’ use of fillers (in the [−RF, +TC] condition) actually maximized the positive effect of setting the time constraint (+TC) when applying the soliloquizing technique. It is possible that not asking the participants to watch out for their use of fillers freed more attentional resources for them to handle the soliloquizing technique under time pressure. All the above findings thus consistently suggest that asking the participants to constrain their use of fillers (e.g., um, uh) while practicing soliloquizing did not efficiently stimulate their lexical retrieval, and hence did not promote their fluency in speaking.

It is possible that fillers are such an internalized or deeply entrenched language device in our language system and that such a language device might be too innate for the participants to consciously manipulate or suppress in real-time spontaneous language production; in this case, the suppression of fillers may be too attention-demanding insofar as it drains the speakers’ attentional deployment for other aspects of unscripted/spontaneous speech activities (see Ellis & Humphreys, 2020; ² Although the participants’ fluency gain was also evidenced in the [−RF, −TC] condition, this gain was ranked as the third among the four study conditions (as seen in Table 1), suggesting that not giving learners any further instruction while performing soliloquizing does not lead to the optimal fluency gain in speaking.
see also Arnold et al., 2004 and Corley et al., 2007 for the effect of fillers from the listener’s perspective). This was most likely why the participants’ fluency gain in the (− RF, − TC) was even better than the gain in the (+ RF, − TC) condition. The results of restrictions or not of fillers in this study thus did not find significance in considering it as a strategy to affect speaking fluency.

All things considered, setting a time limit on soliloquizing thus plays a more pivotal role than asking learners to monitor or constrain their use of fillers. Language instructors may want to encourage learners to practice soliloquizing individually with time pressure (using the principles of the 4/3/2 technique).

Notably, in addition to imposing a time constraint on soliloquizing, as indicated in the post-study interview, 33% of the participants suggested that they would find soliloquizing more helpful if they were provided with feedback or assessment from a language instructor (see responses to interview question #1, Table 4).

This study started out hoping to establish the pedagogical potency of soliloquizing as a self-practice technique after class; yet, despite the actual gains in their fluency, their accounts are suggestive of L2 learners’ reliance on instructor feedback (even for after-class practice). This suggestion should not be overlooked as this is most likely why the standard deviation value—an indication of inter-learner variation—observed in the posttest (23.08) was slightly larger than that before the treatment (18.26), despite the overall gain in the participants’ fluency. This larger standard deviation value in the posttest suggests that some participants’ gains after the treatment were probably not as manifest as those of their peers, and that some form of additional feedback or scaffolding was likely warranted. This is an issue to be further validated in future research.

Note, however, that incorporation of external feedback in soliloquizing would, arguably, violate the spirit of soliloquizing, because soliloquizing—which mainly consists of self-interviews that learners carry out by themselves acting both as the interviewer who inquires and the interviewee who answers—emphasizes individuality and autonomy. One could therefore argue that this individuality of soliloquizing allows learners to practice oral fluency in a self-selected, psychologically-safe environment whenever they desire (see Efromovich, 2013 and Zhang, 2008 for creating individualized practice environments through soliloquizing). In this case, the inclusion of external (e.g., teacher) feedback in soliloquizing may make this fluency practice not the best candidate for an after-class, at-home fluency practice technique (where students usually do not get teacher feedback).

To address this issue, this study argues that the additional external feedback that a learner needs—either for linguistic or psychological reasons—in soliloquizing does not necessarily have to be contingent on language instructors. One may recall that in this study, all participants were required to observe other participants’ practice videos (a practice following suggestions from Li & Zhou, 2001), and that after the treatment, the participants agreed that viewing the video recordings of how their peers coped with the challenge of soliloquizing helped them to better reflect on their own practices and improve their performance in speaking (see item #6 in Table 3). In this light, when teacher feedback is not possible or available for at-home soliloquizing practice, instructors may want to give more weight to the peer (video) review element, explicitly informing (L2) learners that they may get additional insights to
further improve their speech performance while observing the recordings of their peers’ practice.

Although soliloquizing could be implemented by learners, and learners can obtain useful feedback for their performance via viewing the practice recordings of their peers while receiving soliloquizing treatment, it does not necessarily lead to the corollary that teacher involvement plays no role at all. In fact, although teachers do not have to partake in the process of soliloquizing, teachers’ professional judgment on the soliloquizing materials (prior to the treatment) is still the key to the success of soliloquizing. Specifically, as seen in 40% of the participants’ responses to interview question #1, the degree of engagement with the soliloquizing practice may be enhanced if the themes of the practice items did not repeat, and/or if the prompts were of conceptually-diversified topics rather than those that were solely based on participants’ background knowledge; this selection critically depends on a language teacher’s professional discretion and judgment prior to the soliloquizing treatment.

However, some participants—albeit still limited in number—reported that they used English more often in their daily lives and unintentionally adopted the soliloquizing technique as a daily practice (see responses to interview question #2; Table 5). This suggests that soliloquizing has a possibility of transforming from an “assigned” instructed practice to an uninstructed practice using various self-initiated strategies such as focusing on conceptual keywords underlying their intention and establishing a personalized “fast-retrieval” lexicon, which mainly consisted of frequently used lexical items during repeated soliloquizing (see responses to interview question #3 honorable comments, Table 7).

Conclusion: Limitations and Future Directions

This study has established the pedagogical potency of the soliloquizing practice through the fluency lens and has put forward the suggestion of imposing a gradually increasing time constraint when practicing soliloquizing. Soliloquizing requires the participants of this study to constantly draw on their schemata (top-down strategies) while actively retrieving and seeking the “right” lexical words (bottom-down strategies) under time pressure. A reviewer points out that the interactive (top-down + bottom-up) speech processing under time pressure is probably the key to the efficacy of soliloquizing, and it may also have a significant impact on the reading intervention program for struggling readers—a contention to be further validated by future research. Nonetheless, several limitations should be acknowledged. To begin with, soliloquizing is an individual practice; therefore, experimentally examining its effects is limited. Much of the participants’ performance data (PSR) depends on the coding of the recordings of the participants’ practices. In this regard, the interval of each individuals’ daily practice sessions cannot be perfectly controlled. Furthermore, positioned as an exploratory study, this study aimed specifically at examining the effect of only soliloquizing on participants’ speaking fluency and at proposing an optimal implementation setting for carrying out soliloquizing. Future researchers could therefore look into the impact of other soliloquizing recommendations proposed by Li and Zhou (2001) in an experimental setting. Learners in this study
did exhibit significant fluency gains after the soliloquizing treatment, which highlights the pedagogical potency of soliloquizing. Note that these learners probably could not attain the fluency gains in spontaneous speaking through a training program with only a few hours of treatment (such as in this study) if the program was not effective, because speaking skills—in particular those necessary for spontaneous speech—take time to develop or surface. Nevertheless, a stronger case for the soliloquizing technique could be made if a control condition had been included. Researchers may want to conduct further research on soliloquizing by including a control condition. Furthermore, although soliloquizing (as a fluency training technique) can be practiced without an instructor or partner on-site, this technique may not comprehensively equip learners with the sociolinguistic competencies that are crucial to pragmatically appropriate conversation (such as turn-taking knowledge). Finally, the small sample size may prevent us from making a strong case for the issues under investigation; future research that expands the work of soliloquizing could adopt a large sample size and look into the impact of other recommendations proposed by Li and Zhou (2001) in an experimental setting.

Appendix

Week 1 School-related prompts.

- W1 Day1: Can you introduce me to the college you are attending?
  - Keywords: Location; your major; history; activities; specialties
- W1 Day2: Can you tell me about your favorite professor in college?
  - Keywords: Department; subject; character; appearance; stories
- W1 Day3: What things do you do with your friends from college?
  - Keywords: Parties; sports; activities; school work; travels
- W1 Day4: What do you wish to do after graduating from college?
  - Keywords: Work; future studies; travels; interests; tests

Week 2 Travel-related prompts.

- W2 Day1: Can you tell me about how you usually go traveling?
  - Keywords: Transportation; distance; friends; reasons; things you bring
- W2 Day2: Can you tell me about your favorite Taiwanese city to travel to?
  - Keywords: Location; natural scenery; weather; food; people
- W2 Day3: Which foreign country do you want to visit the most?
  - Keywords: Natural scenery; leisure activities; location; culture; people
- W2 Day4: What cool stories do you have from your travel experiences?
  - Keywords: Location; natural scenery; activities; culture; people

Week 3 Leisure activity-related prompts.

- W3 Day1: Can you tell me about the things you do as leisure activities?
  - Keywords: Hobbies; reading; sports; drawing; media
• W3 Day2: Can you tell me about your most-visited social media after class?
  Keywords: Facebook; YouTube; Line; chat; learn
• W3 Day3: What is the music you listen to in your free time?
  Keywords: Music style; instruments; singer/band; favorite song; orchestra
• W3 Day4: What is your favorite movie to watch in your free time?
  Keywords: Movie type; language; length; the story; actor

Week 4 News-related prompts.

• Week 4 Day1: Can you tell me about an interesting news story?
  Keywords: Events; location; people; effects; time
• Week 4 Day2: Can you tell me about a news story related to COVID-19?
  Keywords: International; national; health; work; travel
• Week 4 Day3: What type of news do you enjoy watching the most? Why?
  Keywords: Health; travel; politics; entertainment; sports
• Week 4 Day4: What do you think about the news you see in Taiwan?
  Keywords: Personal feelings; international; local; news type; helpfulness

Author Contribution Both authors contribute equally to conception and design, acquisition of data, analysis, and interpretation of data. While the first author is responsible for drafting this manuscript, the corresponding (second) author takes care of revising this manuscript and responds to the reviewers. Both authors approve the published version of this manuscript.

Funding This research study is sponsored by the Taiwanese Ministry of Science and Technology (Project number: 109–2813-C-003–042-H).

Declarations

Consent to Participate. Standardized consent forms that explained the study and the potential risk/benefits were signed by participants.

Conflict of Interest The authors declare no competing interests.

References

Arevart, S., & Nation, P. (1991). Fluency improvement in a second language. RELC Journal, 22(1), 84–94.
Arnold, J. E., Hudson, C. L., & Tanenhaus, M. K. (2007). If you say thee uh you are describing something hard: The on-line attribution of disfluency during reference comprehension. Journal of Experimental Psychology: Learning, Memory, and Cognition, 33(5), 914–930.
Arnold, J. E., Tanenhaus, M. K., Altmann, R. J., & Fagnano, M. (2004). The old and thee, uh, new: Disfluency and reference resolution. Psychological Science, 15, 578–582.
Boers, F. (2014). A reappraisal of the 4/3/2 activity. RELC Journal, 45, 221–235.
Bosker, H. R., Leon, S. D., Bloom, J. E., Schober, M. F., & Brennan, S. E. (2001). Disfluency rates in spontaneous speech: Effects of age, relationship, topic, role, and gender. Language and Speech, 44, 123–147.
Bosker, H. R., Pinget, A.-F., Quene, H., Sanders, T., & De Jong, N. H. (2013). What makes speech sound fluent? The contributions of pauses, speed and repairs. Language Testing, 30, 159–175.
Bui, G., Ahmadian, M., & Hunter, A. (2019). Spacing effects on repeated L2 task performance. System, 81, 1–13.
Clark, H., & H., & Fox Tree, J. E. (2002). Using uh and um in spontaneous speaking. Cognition, 84(1), 73–111.
Corley, M., MacGregor, L., & Donaldson, D. (2007). ‘It’s the way that you, er, say it’ Hesitations in speech affect language comprehension. Cognition, 105, 658–668.
Dewaele, J. M., & Furnham, A. (1999). Extraversion: The unloved variable in applied linguistic research. Language Learning, 49(13), 509–544.
De Jong, N. H. (2016). Fluency in second language assessment. In D. Tsagari & J. Banerjee (Eds.), Handbook of second language assessment (pp. 203–218). Mouton de Gruyter.
De Jong, N. H. (2018). Fluency in second language testing: Insights from different disciplines. Language Assessment Quarterly, 15, 237–254.
De Jong, N. H., & Perfetti, C. A. (2011). Fluency training in the ESL classroom: An experimental study of fluency development and proceduralization. Language Learning, 61(2), 533–568.
DeKeyser, R. M. (2017). Knowledge and skill in SLA. In S. Loewen & M. Sato (Eds.), The Routledge handbook of second language acquisition (pp. 15–32). Routledge.
Doe, T. (2021). Fluency development in an EFL setting: A one-semester study. Advanced online publication.
Ellis, R., & Humphreys, G. W. (2020). Word recognition and production. In Connectionist psychology: A text with readings (pp. 313–366). London: Psychology Press.
Engelhardt, P. E., Ferreira, F., & Nigg, J. T. (2011). Language production strategies and disfluencies in multi-clause network descriptions: a study of adult attention-deficit/hyperactivity disorder. Neuropsychology, 25(4), 442–453.
Ecallle, J., Dujardin, E., Gomes, C., Cros, L., & Magnan, A. (2021). Decoding, fluency and reading comprehension: Examining the nature of their relationships in a large-scale study with first graders. Reading & Writing Quarterly, 37(5), 444–461.
Fan, Y. Y., & Shao X. R. (2011). ziyanziyu fa zai kouyu xunlian zhongdi yingyong shizhengyanjiu [The empirical research on application of “self-talk” method in oral english training]. Legend Biography Literary Journal selection, 50–51.
Gatbonton, E., & Segalowitz, N. (1988). Creative automatization: Principles for promoting fluency within a communicative framework. TESOL Quarterly, 22, 473–492.
Gatbonton, E., & Segalowitz, N. (2005). Rethinking communicative language teaching: A focus on access to fluency. Canadian Modern Language Review, 61(3), 325–353.
Hanzawa, K. (2021). Development of second language speech fluency in foreign language classrooms: A longitudinal study. Language Teaching Research, 13621688211008693.
Huensch, A., & Tracy-Ventura, N. (2017). L2 utterance fluency development before, during, and after residence abroad: A multidimensional investigation. Modern Language Journal, 101, 275–293.
Kormos, J. (2006). Speech production and second language acquisition. Lawrence Erlbaum Associates.
Kosmala, L. & Morgenstern. A., 2019. Should ‘uh’ and ‘um’ be categorized as markers of disfluency? The use of fillers in a challenging conversational context. In Fluency and Disfluency across Languages and Language Varieties, edited by Liesbeth D., Gilquin, G., & Simon, A.C., Corpora and Language in Use-Proceedings 4. Louvain-la-Neuve: Presses Universitaires de Louvain.
Lambert, C., Kornos, J., & Minn, D. (2016). Task repetition and second language speech processing. Studies in Second Language Acquisition, 39, 167–169.
Lennon, P. (1990). Investigating fluency in EFL: A quantitative approach. Language Learning, 40(3), 387–417.
Lennon, P. (2000). The lexical element in spoken second language fluency In Perspectives on Fluency, Edited by: Riggenbach, H. 25–42. Ann Arbor, MI: University of Michigan Press.
Li, X., & Zhou, C. L. (2001). qiaoyong “ziyanziyu” tigao yingyu koutou biaoda nengli [Cleverly utilize “self-talk” as a means to promote English oral delivery abilities]. Teach Yourself English, 12, 14–16.
Liu, Y. T., & Tseng, W. T. (2019). Optimal implementation setting for computerized visualization cues in assisting L2 intonation production. System, 87, 102145.
Maurice, K. (1983). The Fluency Workshop. TESOL Newsletter, 17(4), 29.
Nation, P. (1989). Improving oral fluency. System, 17(3), 377–384.
Peltonen, P. (2017). Temporal fluency and problem-solving in interaction: An exploratory study of fluency resources in L2 dialogue. System, 70, 1–13.
Segalowitz, N. (2000). Automaticity and attentional skill in fluent performance In Perspectives on Fluency, Edited by: Riggenbach, H. 25–42. Ann Arbor, MI: University of Michigan Press.
Skehan, P., Foster, P., & Shum, S. (2016). Ladders and snakes in second language fluency. *International Review of Applied Linguistics in Language Teaching, 54*, 97–111.

Skehan, P., & Foster, P. (1997). Task type and task processing conditions as influences on foreign language performance. *Language Teaching Research, 1*, 185–211.

Suzuki, Y., Nakata, T., & DeKeyser, R. M. (2019). Optimizing second language practice in the classroom: Perspectives from cognitive psychology. *Modern Language Journal, 103*, 551–561.

TEDx Talks. (2013, August 31). 5 techniques to speak any language | Sid Efromovich [Video]. YouTube. https://www.youtube.com/watch?v=WLHr1_EVtQ&t=649s

Thai, C., & Boers, F. (2016). Repeating a monologue under increasing time pressure: Effects on fluency, accuracy and complexity. *TESOL Quarterly, 50*(2), 369–393.

Timina, S. A. (2015). Causes of English speaking anxiety among Taiwanese university students. *Proceedings of INTCESS15 – 2nd International Conference on Education and Social Sciences*, 1305–1309.

Tran, M. N., & Saito, K. (2021). Effects of the 4/3/2 Activity revisited: Extending Boers (2014) and Thai & Boers (2016). Advanced online publication.

Zhang, Y. (2008). yingyu kouyu xunlian kewai “yuan huan jing ”suzao de jizhong tujing [Approaches of creating authentic after-class oral English environment for college students]. *Journal of Zhejiang Ocean University (humane Science), 25*(4), 113–116.

Zhang, Y. (2018). guanyu daxue yingyu kouyu xunlian ziwoduihua de shizheng yanjiu [An empirical study on the self-talk practice of college oral English]. *Journal of Zhejiang University of Science and Technology, 31*(02), 170–174.

Efromovich, S. (2013). 5 techniques to speak any language [Video]. TED Conferences. https://www.tedxtokyo.com/translated_talk/5-techniques-to-speak-anylanguage/

Authors and Affiliations

Shang-En Huang1 · Yeu-Ting Liu2

Yeu-Ting Liu
yeutingliu@ntnu.edu.tw

1 Department of Chinese As a Second Language, National Taiwan Normal University, Taipei City, Taiwan

2 Department of English, National Taiwan Normal University, Taipei City, Taiwan