

*Promoting EFL students' accuracy and fluency through
interactive practice activities*

Kim McDonough

Concordia University, Montreal, Canada

<https://orcid.org/0000-0003-3165-9687>

kim.mcdonough@concordia.ca

Masatoshi Sato

Universidad Andrés Bello, Santiago, Chile

<https://orcid.org/0000-0001-7111-3406>

masatoshi.sato@unab.cl

Abstract

This study examined the effectiveness of interactive activities at facilitating EFL students' production of English relative clauses. Thirty-seven EFL learners in Chile carried out interactive activities designed to elicit relative clauses. Pre- and posttests were used to examine whether carrying out the activities facilitated the students' production of relative clauses. All interactions were audio-recorded and the transcripts were analyzed to determine how accurately and fluently the students produced relative clauses before, during, and after the practice activities. Whereas accuracy was defined as errors involving relative clause formation, fluency was operationalized in terms of the number of pauses, false starts, and self-corrections that occurred within relative clauses. The results showed that the students produced significantly more accurate relative clauses on the posttest; however, their production of dysfluencies remained unchanged. Implications for the use of interactive activities are discussed.

Keywords: interactive activities; skill acquisition theory; accuracy and fluency; structural priming; EFL

1. Introduction

Despite the widespread acceptance of communicative language teaching (CLT), a persistent challenge for communicatively-oriented L2 teachers remains how to provide students with opportunities to meaningfully produce the target language orally so that they become accurate and fluent language users. While accuracy refers to error-free speech, fluency here refers to utterance fluency, which is measured in terms of disturbances to speech rate and to the flow of speech, such as pauses and reformulations (Segalowitz, 2010). In some early discussions of CLT (e.g., Brumfit, 1984), accuracy and fluency were presented as distinct and polarized concepts, with each one associated with particular types of classroom activities. For example, whereas fluency-oriented activities involved genuine communication and spontaneous production, accuracy-oriented activities were more tightly-controlled and less meaning-oriented (Koponen & Riggensbach, 2000). In contemporary CLT classrooms, the emphasis is often on fluency-building activities. For example, Rossiter and colleagues' review of ESL textbook and teacher resources (Rossiter, Derwing, Manimtim, & Thomson, 2010) found that the most common fluency-building activities were free production activities, such as role plays and discussions. However, free production activities often fail to elicit grammatical structures that are difficult to acquire (Collins & White, 2014). In addition, they may not provide students with enough meaningful and repetitive practice so that they can develop the skill to retrieve linguistic forms with greater proceduralization or automaticity (DeKeyser, 2010; Gatbonton & Segalowitz, 2005; Rossiter et al., 2010; Sato & McDonough, in press).

The importance of repetition/rehearsal activities can be understood through reference to skill acquisition theory (DeKeyser, 2001, 2007a, 2017), which states that the language learning begins with the acquisition of declarative knowledge (i.e., knowledge that or knowledge as objects of thought). Through repeated practice, students become better at putting declarative knowledge to use to produce grammar more accurately, effortlessly, and frequently, which corresponds with the relatively quick development of procedural knowledge (Tavakoli, Campbell, & McCormack, 2016). Over a much longer time frame, students continue to use the grammar in a variety of contexts, which results in the development of the automatized knowledge that underlies fluent and accurate language use. Put simply, knowledge of grammar rules and vocabulary is not sufficient to ensure spontaneous and accurate language use. Instead, opportunities to draw upon that knowledge for communication through rehearsal and systematic practice build procedural knowledge and may eventually lead to automatized knowledge. Importantly, such practice needs to be meaningful, as opposed to mechanical, because a type of knowledge developed in a given context is best transferred to the same or a similar

context (i.e., transfer appropriate processing, see Gatbonton & Segalowitz, 2005; Lyster & Sato, 2013). That is, if the instructional goal is to help students develop accuracy and fluency during interactive, spontaneous language use, practice activities need to approximate that context.

Thus, a crucial question for communicatively-oriented L2 teachers is how to design and implement practice activities that facilitate proceduralization especially for structures that are difficult for students to learn. As defined by DeKeyser (2007b), practice refers to “specific activities in the second language engaged in systematically, deliberately, with the goal of developing knowledge of and skills in the second language” (p. 8). In some CLT contexts, this type of systematic and deliberate practice has been implemented through teacher-fronted interaction, in which the instructors ask individual students questions that target specific content or language points (e.g., Sato & McDonough, *in press*). However, teacher-fronted interaction has been shown to elicit low quantities of student talk, in part because instructors tend to ask questions to evaluate learner knowledge or to verify that students have understood key concepts (e.g., Musumeci, 1996; Nassaji & Wells, 2000) as opposed to engage in authentic communication. Alternatively, having students interact with each other creates more practice opportunities (Loewen & Sato, 2018; Philp, Adams, & Iwashita, 2014; Sato & Ballinger, 2016). Hence, instructors have incorporated pair and small group activities into their instructional routines, such as during the ‘produce’ phase of a PPP lesson, or by asking students to complete a communicative task in task-based or task-supported classrooms. Despite their potential, such activities have been the subject of considerable debate by both instructors and students, who have expressed doubts as to whether they facilitate the acquisition of new linguistic knowledge or the development of grammatical accuracy (Burrows, 2008; Carless, 2003; McDonough, 2004; Sato, 2017; Watson-Todd, 2006).

Researchers have proposed several design and implementation factors that may increase the likelihood that interactive activities can provide systematic practice for specific language forms, such as modeling peer interaction (Kim, 2013; Kim & McDonough, 2011; Leeseer, 2004; Swain & Lapkin, 1998) and training students how to interact (Fujii, Ziegler, & Mackey, 2016; Nakatani, 2010; Sato & Ballinger, 2012; Sato & Lyster, 2012). Researchers have also highlighted the importance of embedding structures into activities that students are likely to find enjoyable and have face validity in communicative classrooms, such as role plays and decision-making or information-gap activities (DeKeyser, 2010). Similarly, Gatbonton and Segalowitz (2005) have called for activities in which functionally-useful utterances are produced and elicited, both naturally and repeatedly.

To create such activities, we drew upon insights from structural priming research to elicit repeated production of a grammatical structure in a non-mechanical

manner. Structural priming is the tendency for speakers to produce a structure that was present in the recent discourse, rather than an alternative structure that can express a similar meaning (Bock, 1986). The occurrence of structural priming during interactive activities has been demonstrated by researchers using the confederate scripting or scripted interaction technique developed by Branigan and colleagues (Branigan, Pickering, & Cleland, 2000), in which participants engage in interactive activities with an interlocutor who has been scripted by the researcher with target grammatical structures. L2 studies adopting this methodology have shown that L2 students' production of the target grammatical structures is influenced by the scripted interlocutor's language use, with such effects evident when they interact with more proficient peers (McDonough & Mackey, 2008) and with same-level classmates (McDonough & Chaikitmongkol, 2010; McDonough, Neumann, & Trofimovich, 2015).

In this exploratory study, therefore, we investigated whether interactive activities inspired by the scripted interaction structural priming method would provide Chilean EFL students with opportunities to produce relative clauses. Drawing on the premise of skill acquisition theory, we focused on accuracy and fluency. According to the theory, the impact of practice on knowledge structures (i.e., proceduralization) can be observed in the decrease of error rate and the increase in processing speed (DeKeyser, 2017). Based on prior studies that have demonstrated positive effects for carrying out interactive activities embedded with primes or models of specific grammatical structures (e.g., McDonough & Chaikitmongkol, 2010; McDonough & Mackey, 2008; McDonough, Neumann, & Trofimovich, 2015), we predicted that the students would produce more accurate relative clauses after engaging in repeated interactive practice. Furthermore, since prior studies have shown that interactive practice facilitates learners' oral fluency (e.g., Sato & Lyster, 2012; Towell, Hawkins, & Bazergui, 1996), we predicted that repeated production of relative clauses while interacting with another learner would promote more fluent production of that structure.

2. Method

2.1. Participants and instructional setting

The participants were 37 second-year undergraduate students (28 women, 9 men) enrolled in an English Education degree program at a university in Chile. They ranged in age from 19 to 29 years, with a mean of 21.9 years ($SD = 2.6$). They were all L1 speakers of Spanish who had studied English previously in elementary, secondary, and university settings for a mean of 10.8 years ($SD = 4.3$). Six participants had previously travelled to an English-speaking country, staying

for one or two semesters. Based on the university curriculum, they had recently completed EFL classes at the B1 level in the Common European Framework of Reference (CEFR). The students' EFL class focused on the use of language as a medium for communication and implemented interactive communicative activities. Typically, the activities were led by the teacher facilitating meaningful interactions with the students based on the textbook. The textbook was theme-based (e.g., health, economy, travelling) and specific grammatical structures were targeted in each unit. According to the instructors and course materials, students had been taught relative clauses, the linguistic target of the current study, via explicit rule explanations in a previous course that focused on relative clauses. Relative clauses are a structure that L2-English learners struggle to acquire regardless of their first languages (Keenan & Comrie, 1977). Although it was assumed that the students possessed a certain degree of knowledge of subject relative clauses, which are the least marked, this assumption was checked by administering a grammar test. Based on a power analysis using the software package R (smallest obtained effect size = .54, sample size = 37, two-tailed test for paired samples, $p = .05$), the power of the obtained sample was .89.

2.2. Materials

The materials included (a) a grammar test, (b) interactive activities, and (c) oral tests. While the grammar test was designed to ensure the students' prior knowledge of relative clauses, the oral tests elicited the students' spontaneous use of relative clauses before (pretest) and after (posttest) they carried out the interactive activities. The interactive activities provided students with models of subject relative clauses (i.e., primes) and elicited production of relative clauses. For both the oral tests and interactive activities, the participants were paired with senior students (4th year) in the same degree program with higher English proficiency (approximately C1) who were research assistants in the second researcher's applied linguistics laboratory. We chose senior students as interlocutors for two reasons. First, previous research comparing learner-learner and learner-native speaker interactions has shown that social relationships affect learners' language production patterns (Fernández Dobao, 2012; Sato & Lyster, 2007). We considered senior students to be more authentic conversational partners than unfamiliar native speakers or researchers. Second, to ensure the validity of priming, it was important for interlocutors to deliver primes accurately and fluently.

2.2.1. Grammar test

As described previously, relative clauses had recently been taught in the students' EFL class. The grammar test was created to ensure that the students had

some declarative knowledge of subject relative clauses that could be accessed during the interactive activities. The test contained 25 randomized items, with 10 subject relative clause items and 15 distracters. Each item presented a sentence with four underlined segments, with one of the underlined segments containing a morpho-syntactic error. The students were instructed to select the segment that contained the error. The relative clause items targeted three error types: incorrect relative pronouns (**Henry Aaron, which played baseball with the Braves for 20 years, was voted into the Hall of Fame in 1982*), omitted relative pronouns (**Bushido is the traditional code of honor of the samurai, were the military nobility of medieval and early-modern Japan*), and resumptive pronouns (**John Wayne, who he appeared in over 200 movies, was the biggest box-office attraction of his time*). The distracters contained errors that were unrelated to relative clauses, including prepositions, plurals, pronouns, word formation, and verb forms.

2.2.2. Interactive practice activities

To provide the students with systematic practice at producing relative clauses, two information-exchange activities used in a previous structural priming study about relative clauses in an ESL setting were used (McDonough, Kielstra, Crowther, & Smith, 2016). The topics targeted in the trivia questions included arts/advertising and world records. Each trivia activity contained 12 questions for the interlocutor to ask the students, for a total of 24 questions. Although our focus was on relative clauses, we did not want the students to simply parrot back the interlocutor's utterances or engage in mechanical practice. Also, it was important to prevent the students from noticing the target structure and to maintain their focus on meaning so that they engaged in meaningful production. Therefore, the interlocutor's questions contained an equal number of relative clauses and prepositional phrases as primes (or models) that would hopefully encourage the students to produce questions with post-nominal modification. To encourage production of post-nominal modification, the students were given 24 question stems (12 per activity) that ended with a head noun (e.g., *what's the company...?*). The students referred to the background information provided with each item (e.g., *Coca-Cola has the longest continuous Olympic sponsorship*) to complete the question fragment, such as by producing a relative clause (*what's the company that has the longest Olympic sponsorship?*). However, it is important to note that the students could complete the fragment using other forms of post-nominal modification, such as participles or prepositional phrases. Excerpt (1) from an interactive practice activity illustrates the nature of their turn-taking and use of the question fragments.

(1) Interactive practice between peer interlocutor (PI) and learner (L)

PI: what's the city that has the most museums? (scripted prime question)

L: The country?

PI: The city

L: The city, Rome. I don't know

PI: London

L: London (*laughing*)

PI: Your turn

L: Uh, who's got a campaign that's called "Real Beauty"? (created from question fragment)

PI: Dove

L: Yeah good

2.2.3. Oral tests

The pre- and posttests were two information-exchange activities used in the same previous study (McDonough et al., 2016). The activities were based on illustrations that depicted a variety of people who lived in the same neighborhood, and each student received information about eight neighbors. The two activities were counterbalanced to account for possible differences in task difficulty or ordering effects. The goal was to describe each individual neighbor (their appearance, activities, and location) until their interlocutor could recognize them within a larger illustration. The participants' materials provided functionally-useful stems that the students could use when describing their pictures, such as *Johan is a musician...* and *Natalia is an artist...* To avoid any influence from the interlocutor's picture descriptions during the tests, a student described all their neighbors first, after which their interlocutor gave picture descriptions. Although the interactive practice activities targeted questions, the test activities provided declarative sentence stems to test whether students could generalize their production of relative clauses across sentence types. In addition, whereas the interactive practice tasks involved a two-way flow of information with both interlocutors alternating turns, the oral tests required a one-way flow of information with each interlocutor taking longer turns.

2.3. Procedure

The materials were administered over a two-week period. The grammar test was administered during the students' regularly-scheduled EFL class, with the students given 15 minutes to complete the 25 items. The instructions stated that each sentence contained only one error that they should identify. Approximately 2-3 days later, they scheduled individual sessions with the senior students to carry out the oral tests and interactive practice activities. In the first

session, the students carried out the pretest (10 minutes), followed by the first practice trivia activity (15 minutes). Ranging from 2 to 3 days later, they had another individual session with a different senior student to carry out the second practice trivia activity (15 minutes), which was followed by the posttest (10 minutes). Prior to starting each activity, the senior students explained its communicative goal and demonstrated how to use the stems with practice items. The second researcher was present during the sessions to provide assistance to the seniors as needed. The sessions were recorded using digital audio-recorders.

2.4. Analysis

The relative clause items on the grammar test were coded for accuracy, with one point awarded for each correctly identified error. The audio-recordings of the oral tests and interactive practice activities were transcribed and verified by research assistants, after which the transcripts were analyzed for the occurrence of accurate relative clauses. A relative clause was operationalized as a subordinate clause modifying a head noun that contained a relative pronoun and a tensed verb. In addition to accuracy involving relative pronouns (i.e., presence when required and correct relationship to the head noun), which had been included on the grammar test, additional accuracy criteria emerged from the production data. Therefore, to be considered accurate, the relative clause was also required to have correct word order and subject-verb agreement with the head noun. Errors involving other aspects of the main or relative clauses, such as word choice, plurals, or determiners were not considered when coding relative clauses. Examples of relative clauses produced by the participants are provided in Table 1.

Table 1 Relative clause coding

Relative clauses	Coding decision
Stella is a cooker who prepares food all the days for the children in the house.	Accurate
What's the company that has the longest continuous Olympic sponsorship?	Accurate
What are the emotions the advertisements target?	Accurate
Johan is a musician who play the piano very well.	Inaccurate: S-V agreement error
What's the cigarette advertisements feature cowboys, horses, and ranching?	Inaccurate: Missing relative pronoun
What's the vodka that the most iconic bottle?	Inaccurate: Missing verb

The students' relative clauses were also coded for fluency in terms of disruptions to the speech flow, which were operationalized as the following dysfluencies: filled and unfilled pauses (minimum of 400 milliseconds), false starts, and self-corrections (see Kormos, 2006; Lennon, 1990; Sato, 2014). We chose

hesitation markers as the index for fluency based on findings that they not only may represent cognitive processing but also influence listeners' perceptions (Fulcher, 1996; Segalowitz & Freed, 2004). All dysfluencies that occurred within the relative clauses (from the beginning until the end of a relative clause) were summed, and an average score was obtained by dividing the number of dysfluencies by the number of relative clauses each participant produced. An independent rater coded a subset of the data (20%) and the interrater reliability values were as follows: accuracy $r = .93$ and dysfluencies $r = .96$. Any disagreements were resolved by the researchers. Alpha was set at .05 for all statistical tests.

3. Results

To check treatment fidelity, first the students' performance on the grammar test was analyzed to determine whether they had existing declarative knowledge of relative clauses and could thus potentially benefit from interactive practice. For the 10 relative clause items, the students' mean score was 7.05 ($SD = 1.48$), which confirmed the instructors' report that the students had received explicit information about relative clause formation in a previous EFL course. Second, the interactive practice data were analyzed to ensure that the peer interlocutors (i.e., senior students) delivered the relative clause primes provided in the materials and that the participants produced relative clauses. As expected, the interlocutors delivered the 12 relative clause trivia questions accurately and without dysfluencies when carrying out the interactive practice activities with all 37 students. Finally, as shown in Table 2, the students produced a mean of 15.92 relative clauses during the interactive practice activities, with more occurring after the interlocutors' relative clause questions than after their prepositional phrase questions. A paired-samples t -test confirmed that the students produced significantly more relative clauses after the interlocutors' relative clause questions than preposition phrase questions, which would be expected based on the logic of structural priming: $t(37) = 2.62$, $p = .013$, $d = .54$.

Table 2 Relative clause production during interactive practice activities

	Sum	<i>M</i>	<i>SD</i>
After relative clause questions	312	8.43	1.82
After prepositional phrase questions	277	7.49	1.68
Total	589	15.92	2.72

Having taken steps to check treatment fidelity, we next addressed the question as to whether carrying out the interactive practice activities helped the students produce relative clauses more accurately or fluently. For accuracy, as

shown in Table 3, the students produced more accurate relative clauses on the posttest ($M = 6.19$) than they did during the pretest ($M = 4.43$). In addition, their production of dysfluencies per relative clause decreased from the pretest test ($M = 1.19$) to the posttest ($M = .77$).

Table 3 Accuracy and fluency scores over time

	Pretest		Posttest		Statistical comparison		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d</i>
Accurate relative clauses	4.43	2.24	6.19	2.00	4.50	.001	.83
Dysfluencies per relative clause	1.19	0.81	.77	.56	2.26	.030	.60

Individual paired-samples *t*-tests were carried for accuracy and dysfluencies separately using an adjusted alpha level of .025 to account for multiple comparisons (.05/2). Whereas the students' accuracy improved significantly over time, their dysfluencies rate did not significantly decrease (see Table 3). The effect sizes (Cohen's *d*) approached medium (between .60 and 1.00) for accuracy but were small (.60) for dysfluencies. In sum, the findings revealed that students' production of accurate relative clauses increased significantly over time, but the change in their fluency did not reach statistical significance.

4. Discussion

The current study explored whether carrying out interactive practice activities created based on the logic of structural priming would positively impact EFL students' accuracy and fluency. The first finding was that the students' accuracy improved over time, which provides further evidence that peer interaction can have a positive impact on EFL learners' production of grammatical structures (McDonough, 2004; Sato & Lyster, 2012) and extends the findings of previous studies that implemented interactive tasks inspired by structural priming in both EFL and ESL settings (McDonough & Chaikitmongkol, 2010; McDonough & Mackey, 2008; McDonough, Neumann, & Trofimovich, 2015). It is important to stress that while the duration of practice was relatively short, the students engaged in massed practice of a targeted grammatical structure. This type of practice differs from pedagogical activities distributed over time that do not encourage students to engage in repeated, meaningful practice. Moreover, the target structure (relative clauses) has been found to pose processing difficulty for both comprehension and production for L2 learners in general (Izumi, 2003) and students can avoid using the structure (see Collins & White, 2014). In our study, students could use prepositional phrases (e.g., *who's the advertiser for the slogan Just Do It?*) to express the same meaning in relative clauses (e.g., *who's the advertiser that uses the slogan Just Do It?*). Hence, it is encouraging that

the students managed to improve their spontaneous production skills¹ of such a difficult structure over a short period of time. Having students carry out interactive practice activities in pairs or groups may be an effective way to supplement teacher-fronted CLT activities and to create opportunities for students to improve their accuracy during communicative interaction.

While interactive practice had a positive effect on the students' accuracy, it did not affect their production of dysfluencies. This finding supports those of Tavakoli et al. (2016) who examined a short-term practice intervention and concluded that breakdown fluency (i.e., silence and pausing) was slower to improve and less impacted by practice than accuracy. It may be the case that distributing the activities over a longer period of time, rather than having students engage in massed practice during a short period of time, could enhance the effectiveness of the activities (see Suzuki & DeKeyser, 2017). In addition, during the course of proceduralization (i.e., gaining a faster and more accurate control over declarative knowledge), students may monitor their speech production more closely (Kormos, 2006; Sato & Lyster, 2012), which may lead to more, rather than fewer dysfluencies.

Reflecting on our objective of creating interactive practice activities that instructors can use to help their students develop accurate and fluent speech, this exploratory study has experimental limitations that may pose issues for the transferability of the findings. First, due to time constraints in the students' EFL class, the students interacted with senior students outside class time rather than carry out the tasks with their classmates. Although interacting with peers from the same degree program has greater ecological validity than interacting with native speakers, to ensure greater transferability, the study should be replicated by having students in the same class carry out the activities as part of their normal instructional routine (see Sato & Loewen, 2019). These types of activities have been shown to facilitate *wh*-question development when Thai EFL learners interacted with both higher-level peers and same-level classmates (McDonough & Chaikitmongkol, 2010; McDonough & Mackey, 2008), so it is plausible that interaction between same-level classmates would also facilitate accurate production of relative clauses. Therefore, it is important that future studies implement the materials in an actual classroom setting where they have been integrated into the instructors' lessons plans, rather than administered a "one-off research activity" (McDonough, 2015, p. 227). Our goal in future studies is to provide instructors with these activities and observe how they incorporate them into their lessons and describe students' interactions while carrying them out.

¹ We prefer to use the term "spontaneous production skills" because we did not directly measure the students' "procedural knowledge." It is possible that the type of knowledge obtained in the exit oral tests was a result of faster processing of declarative knowledge (see DeKeyser, 2017).

Although our materials were inspired by the logic of structural priming, i.e., the senior student interlocutors were scripted with relative clauses as a tool for eliciting production of relative clauses, our aim was not to test theoretical claims about the occurrence, strength, or persistence of structural priming. Instead, our main focus was to explore whether the basic premise of structural priming could be applied to the design of interactive activities as a tool for eliciting non-mechanical, meaningful production of a target structure. To test theoretical claims about structural priming, such as whether it is a form of implicit learning or if various cognitive abilities are implicated in its occurrence or persistence, more tightly-controlled experiments are necessary, along with more sophisticated statistical analyses. Finally, due to our focus on helping students improve their production of relative clauses, all students carried out the interactive practice activities. In our setting, it was not appropriate to deny some student practice opportunities to have a control group. Including a control group would provide greater empirical evidence that carrying out practice activities is more effective than not practicing, and this may be an avenue for future research in more tightly-controlled settings. Finally, in light of the possibility that the development of fluency may require greater practice, our future studies aim to explore the benefits of implementing a greater number of interactive practice activities over a longer time period.

Despite the limitations, the findings provide some pedagogical implications. Studies have shown that instructors in ESL settings also face some of the challenges associated with implementation of communicative activities in EFL settings (Douglas & Kim, 2015; Plevs & Zhao, 2010), such as mismatches with students' expectations and integrating a focus on form. To help address some of these challenges, it is important to provide students with opportunities to use a target structure naturally and repeatedly during communicatively-oriented activities. Our focus on trivia provided an optimal way to elicit relative clauses through functionally-useful utterances while maintaining a primary focus on meaning. Trivia activities could be adapted to target a wide variety of grammatical structures, including other forms of post-nominal modification (prepositional phrases and participles), question forms, and adverbial clauses. Second, having students interact with a more senior student in the same degree program was particularly useful because they were able to provide appropriate models of the target structure without being an authoritative figure. This type of interaction can be implemented into other activities such as poster carousel tasks (Lynch & Maclean, 2001) by asking seniors to be the audience. Surveys prepared in class and administered outside class time (Rossiter et al., 2010) to the students' peers could promote effective practice. In intensive and academic English programs, students from a higher level or more advanced classes could be asked to engage with lower-level students.

5. Conclusion

In conclusion, this exploratory study about the effectiveness of interactive practice activities inspired by the logic of structural priming showed that students who engaged in interactive practice activities produced more accurate relative clauses. However, their production of dysfluencies did not significantly change after carrying out the practice activities. Having empirically-validated the activities for promoting accuracy, our future research will explore the effectiveness of implementing interactive practice activities in authentic CLT classrooms by working with instructors who are interested in incorporating interactive practice into their instructional routines. In addition, through additional activity design and validation studies, we aim to identify interactive practice activities that also positively impact students' fluency development, thereby providing instructors with additional activities for use in CLT classrooms.

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References

- Bock, K. (1986). Syntactic persistence in language production. *Cognitive Psychology*, 18, 355-387.
- Branigan, H., Pickering, M., & Cleland, A. (2000). Syntactic co-ordination in dialogue. *Cognition*, 75, B13-B25.
- Brumfit, C. (1984). *Communicative methodology in language teaching: The roles of fluency and accuracy*. Cambridge: Cambridge University Press.
- Burrows, C. (2008). An evaluation of activity-based learning in the Japanese classroom. *English Today*, 24(4), 11-16.
- Carless, D. (2003). Factors in the implementation of activity-based teaching in primary schools. *System*, 31, 485-500.
- Collins, L., & White, J. (2014). The quantity and quality of language practice in typical interactive pair/group activities. *TESL Canada Journal*, 31, 47-67.
- DeKeyser, R. (2001). Automaticity and automatization. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 125-151). Cambridge: Cambridge University Press.
- DeKeyser, R. (2007a). Skill acquisition theory. In B. VanPatten, & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (pp. 97-114). Mahwah, NJ: Lawrence Erlbaum.
- DeKeyser, R. (2007b). Situating the concept of practice. In R. M. DeKeyser (Ed.), *Practice in a second language: Perspectives from applied linguistics and cognitive psychology* (pp. 1-18). New York: Cambridge University Press.
- DeKeyser, R. (2010). Practice for second language learning: Don't throw out the baby with the bathwater. *International Journal of English Studies*, 10(1), 155-165.
- DeKeyser, R. (2017). Knowledge and skill in ISLA. In S. Loewen, & M. Sato (Eds.), *The Routledge handbook of instructed second language acquisition* (pp. 15-32). New York: Routledge.
- Douglas, S.R., & Kim, M. (2014). Activity-based language teaching and English for Academic Purposes: An investigation into instructor perceptions and practice in the Canadian context. *TESL Canada Journal*, 31(8), 1-22.
- Fernández Dobao, A. (2012). Collaborative dialogue in learner–learner and learner–native speaker interaction. *Applied Linguistics*, 33, 229-256.
- Fujii, A., Ziegler, N., & Mackey, A. (2016). Peer interaction and metacognitive instruction in the EFL classroom. In M. Sato & S. Ballinger (Eds.), *Peer interaction and second language learning: Pedagogical potential and research agenda* (pp. 63-89). Amsterdam: John Benjamins.
- Fulcher, G. (1996). Does thick description lead to smart tests? A data-based approach to rating scale construction. *Language Testing*, 13, 208-238.

- Gatbonton, E., & Segalowitz, N. (2005). Rethinking communicative language teaching: A focus on access to fluency. *Canadian Modern Language Review*, 61, 325-353.
- Izumi, S. (2003). Processing difficulty in comprehension and production of relative clauses by learners of English as a second language. *Language Learning*, 53, 285-323.
- Keenan, E. L., & Comrie, B. (1977). Noun phrase accessibility and universal grammar. *Linguistic Inquiry*, 8, 63-99.
- Kim, Y. (2013). Effects of preactivity modeling on attention to form and question development. *TESOL Quarterly*, 47, 8-35.
- Kim, Y., & McDonough, K. (2011). Using pre-task modeling to encourage collaborative learning opportunities. *Language Teaching Research*, 15, 183-199.
- Koponen, M., & Riggensbach, H. (2000). Overview: Varying perspectives on fluency. In H. Riggensbach (Ed.), *Perspectives on fluency* (pp. 5-24). Ann Arbor, MI: University of Michigan.
- Kormos, J. (2006). *Speech production and second language acquisition*. Mahwah, NJ: Lawrence Erlbaum.
- Leeser, M. J. (2004). Learner proficiency and focus on form during collaborative dialogue. *Language Teaching Research*, 8, 55-81.
- Lennon, P. (1990). Investigating fluency in EFL: A quantitative approach. *Language Learning*, 40, 387-417.
- Loewen, S., & Sato, M. (2018). State-of-the-Art Article: Interaction and instructed second language acquisition. *Language Teaching*, 51(3), 285-329.
- Lynch, T., & Maclean, J. (2001). 'A case of exercising': Effects of immediate activity repetition on learners' performance. In M. Bygate, P. Skehan, & M. Swain (Eds.), *Researching pedagogic activities: Second language learning, teaching and testing* (pp. 140-162). Harlow, UK: Pearson Education.
- Lyster, R., & Sato, M. (2013). Skill acquisition theory and the role of practice in L2 development. In M. P. García Mayo, J. Gutierrez-Mangado, & M. Martínez Adrián (Eds.), *Contemporary approaches to second language acquisition* (pp. 71-92). Amsterdam, The Netherlands: John Benjamins.
- McDonough, K. (2004). Learner-learner interaction during pair and small group activities in a Thai EFL context. *System*, 32, 207-224.
- McDonough, K. (2015). Perceived benefits and challenges with the use of collaborative tasks in EFL contexts. In M. Bygate (Ed.), *Domains and directions in the development of TBLT* (pp. 225-246). Amsterdam: John Benjamins.
- McDonough, K., & Chaikitmongkol, W. (2010). Collaborative syntactic priming activities and EFL learners' production of *wh*-questions. *Canadian Modern Language Review*, 66, 817-841.
- McDonough, K., Kielstra, P., Crowther, D., & Smith, G. (2016). Structural priming in L2 speech production: Examining relationships among English L2 speakers'

- production, cognitive abilities, and awareness. In A. Mackey & E. Marsden (Eds.), *Advancing methodology and practice: The IRIS repository of instruments for research into second languages* (pp. 112-131). New York: Routledge.
- McDonough, K., & Mackey, A. (2008). Syntactic priming and ESL question development. *Studies in Second Language Acquisition*, 30, 31-47.
- McDonough, K., Neumann, H., & Trofimovich, P. (2015). Eliciting production of L2 target structures through collaborative priming activities. *Canadian Modern Language Review*, 71, 75-95.
- Musumeci, D. (1996). Teacher-learner negotiation in content-based instruction: Communication at cross-purposes? *Applied Linguistics*, 17, 286-325.
- Nakatani, Y. (2010). Identifying strategies that facilitate EFL learners' oral communication: A classroom study using multiple data collection procedures. *Modern Language Journal*, 94, 116-136.
- Nassaji, H., & Wells, G. (2000). What's the use of 'triadic dialogue'? An investigation of teacher student interaction. *Applied Linguistics*, 21, 376-406.
- Philp, J., Adams, R., & Iwashita, N. (2014). *Peer interaction and second language learning*. New York: Routledge.
- Plews, J. L., & Zhao, K. (2010). Tinkering with activities knows no bounds: ESL teachers' adaptations of activity-based language-teaching. *TESL Canada Journal*, 28(1), 41-59.
- Rossiter, M., Derwing, T., Manimtim, L., & Thomson, R. (2010). Oral fluency: The neglected component in the communicative language classroom. *Canadian Modern Language Review*, 66, 583-606.
- Sato, M. (2014). Exploring the construct of interactional oral fluency: Second Language Acquisition and Language Testing approaches. *System*, 45, 79-91.
- Sato, M. (2017). Interaction mindsets, interactional behaviors, and L2 development: An affective-social-cognitive model. *Language Learning*, 67(2), 249-283.
- Sato, M., & Ballinger, S. (2012). Raising language awareness in peer interaction: A cross-context, cross-method examination. *Language Awareness*, 21(1-2), 157-179.
- Sato, M., & Ballinger, S. (2016). Understanding peer interaction: Research synthesis and directions. In M. Sato & S. Ballinger (Eds.), *Peer interaction and second language learning: Pedagogical potential and research agenda* (pp. 1-30). Amsterdam, The Netherlands: John Benjamins.
- Sato, M., & Loewen, S. (2019). Methodological strengths, challenges, and joys of classroom-based quasi-experimental research: Metacognitive instruction and corrective feedback. In R. DeKeyser & G. Prieto Botana (Eds.), *Doing SLA research with implications for the classroom: Reconciling methodological demands and pedagogical applicability* (pp. 31-54). Amsterdam, The Netherlands: John Benjamins. <http://doi.org/10.1075/llt.52.03sat>

- Sato, M., & Lyster, R. (2007). Modified output of Japanese EFL learners: Variable effects of interlocutor vs. feedback types. In A. Mackey (Ed.), *Conversational interaction in second language acquisition: A collection of empirical studies* (pp. 123-142). Oxford, UK: Oxford University Press.
- Sato, M., & Lyster, R. (2012). Peer interaction and corrective feedback for accuracy and fluency development: Monitoring, practice, and proceduralization. *Studies in Second Language Acquisition*, 34(4), 591-626.
- Sato, M., & McDonough, K. (in press). Practice is important but how about its quality? Contextualized practice in the classroom. *Studies in Second Language Acquisition*. <http://doi.org/10.1017/S0272263119000159>
- Segalowitz, N. (2010). *Cognitive bases of second language fluency*. New York: Routledge.
- Segalowitz, N., & Freed, B. (2004). Context, contact, and cognition in oral fluency acquisition: Learning Spanish in at home and study abroad contexts. *Studies in Second Language Acquisition*, 26(2), 173-199.
- Suzuki, Y., & DeKeyser, R. (2017). Effects of distributed practice on the proceduralization of morphology. *Language Teaching Research*, 21, 166-188.
- Swain, M., & Lapkin, S. (1998). Interaction and second language learning: Two adolescent French immersion students working together. *Modern Language Journal*, 82, 320-337.
- Tavakoli, P., Campbell, C., & McCormack, J. (2016). Development of speech fluency over a short period of time: Effects of pedagogic intervention. *TESOL Quarterly*, 50, 447-471.
- Towell, R., Hawkins, R., & Bazergui, N. (1996). The development of fluency in advanced learners of French. *Applied Linguistics*, 17(1), 84-119.
- Watson-Todd, R. (2006). Continuing change after the innovation. *System*, 34, 1-14.