

## Using Collaborative Tasks to Elicit Auditory and Structural Priming

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■ Interaction between second language (L2) learners in which the primary goal is the communication of meaning rather than the manipulation of language forms is widely regarded as beneficial for L2 learning from a variety of theoretical and pedagogical perspectives. Numerous interaction studies and several meta-analyses (Keck, Iberri-Shea, Tracy-Ventura, & Wa-Mbaleka, 2006; Li, 2010; Mackey & Goo, 2007; Russell & Spada, 2006) have supported the positive relationship between interaction and L2 learning, when learners interact with native speakers and with peers in L2 classrooms. Despite these positive findings for peer interaction, questions remain as to how to design and implement collaborative activities to maximize the benefits of peer interaction in L2 classrooms. Besides learning opportunities created through interactional feedback, modified output, and attention to language form, collaborative tasks may also promote L2 learning by generating the occurrence of priming (McDonough, 2011; McDonough & Chaikitmongkol, 2010).

Priming refers to effects of speakers' previous experience with specific aspects of language (e.g., vocabulary, grammar) on their subsequent language comprehension or production. For example, auditory priming denotes the tendency for speakers to process a spoken word (e.g., *phenomenon*) more quickly or accurately if they have previously heard it (Schacter & Church, 1992). Structural priming, in turn, describes the tendency for speakers to produce a syntactic structure that appeared in the recent discourse, as opposed to an alternative (Bock, 1986). For instance, if a speaker uses a passive structure (*the votes were tallied*), later in the conversation his/her interlocutor is likely to produce a new utterance with the passive (*results were announced*) rather than an alternative structure, such as an active construction (*the officials announced the results*). Both auditory and structural priming occur in L2 comprehension and production, suggesting that priming may facilitate the use of native-like structures as opposed to simple or erroneous ones (McDonough & Kim, 2009; Trofimovich

& Gatbonton, 2006; for review, see McDonough & Trofimovich, 2008).

If priming facilitates the subsequent production of words and structures, then it may be a means of eliciting L2 forms during peer interaction without any explicit focus on them. Collaborative priming activities provide models of target structures and elicit production of those structures with a variety of lexical items, without requiring that learners provide each other with feedback, produce modified output, or discuss language form. Consequently, these types of activities may be an innovative method for modeling and eliciting target structures through peer interaction in L2 classrooms. Despite its potential benefits, priming has not been widely studied in L2 classroom contexts, and no studies to date have investigated whether collaborative tasks can elicit auditory and structural priming simultaneously. Therefore, as a crucial first step in a larger-scale research project, this study examined whether collaborative tasks can elicit auditory and structural priming during peer interaction in L2 classrooms.

## **METHOD**

### **Participants**

The participants were 42 adult students (22 women, 20 men) enrolled in an ESL course at an English-medium university in Montréal, Canada. They were adults with a mean age of 21.8 years (17–36) who had studied English previously for a mean of 6.8 years (1–15) and had resided in Montréal for about 2 years (1 month–14 years). With the exception of one graduate student in accounting, the participants were enrolled in undergraduate programs in business and finance (19), social science (13), science and engineering (8), and fine arts (1). Their native language (L1) backgrounds included Chinese (16); Arabic (6); Spanish (5); French (5); Farsi (4); Bengali (2); and Romanian, Greek, Urdu, and Khmer (1 each). The ESL course was designed to foster academic skills and met for two 3-hour instructional periods per week over a 13-week semester. The course was organized into 11 thematic units, and each unit included a variety of reading, writing, grammar, and speaking activities.

### **Materials and Procedure**

The materials were information-exchange tasks that complemented the content focus of two thematic units in the ESL course: family and

social behavior. Both tasks were a quiz activity in which students tested each other's knowledge about beliefs and facts concerning family relationships (domestic violence for student A and marriage for student B) and social behavior (immigration for student A and workplace discrimination for student B). Each quiz concluded with open-ended questions that linked the topics back to the course materials. The two tasks, which were created to be as comparable as possible in terms of task length, language complexity, and student involvement, targeted the following forms: (a) three- and four-syllable words with primary stress on the second syllable (auditory priming) and (b) either English passives or relative clauses (structural priming). The auditory targets thus included 40 words from the Academic Word List (AWL) that followed 3-2 (*condition, establish*) and 4-2 (*consistently, capacity*) word stress patterns (Coxhead, 2000), evenly distributed across the two tasks. The structural targets were ten relative clauses and ten passives incorporated into the family and social behavior tasks, respectively.

For both tasks, each student received materials that contained five primes and five prompts in alternating order. The primes and prompts were statements that expressed conventional beliefs about the topic, which could be factually true or false. Whereas the primes were complete sentences that contained a target structure and a stress pattern word, the prompts were fragments with a stress pattern word only. The participants could complete the prompts using their own words and following the provided content hints. Table 1 shows an example of the domestic violence materials from the family task.

The first belief statement is a prime sentence with a relative clause (*that people hear about in the news*) and a 4-2 stress pattern word (*statistically*). The second belief statement is a prompt, which is a fragment that the student completes using information from the Facts column.

**TABLE 1**  
**Example of a Prime-Prompt Sequence**

Beliefs	Facts
The kind of domestic violence that people hear about in the news is statistically very rare.	False. Statistically, 3 to 4 million women suffer each year in the United States alone. One study found that 31% of women had been physically assaulted.
Domestic violence is a phenomenon	True. Domestic violence is a frequent and recurring phenomenon. It includes the repeated use of many tactics, such as intimidation, psychological abuse, and sexual assault.
Hint: <i>What does it include?</i>	

The prompt could be completed using a variety of structures, such as a prepositional phrase (*with many tactics*) or the target structure (*that includes many tactics*). It also contains a 4-2 word (*phenomenon*), which could be articulated with the correct stress (*pheNOmenon*) or with an alternative stress (e.g., *phenomeNON*).

Each task was implemented during 20 min of a regularly scheduled class period. Half of the participants completed the family task, while the other half carried out the social behavior task. After receiving their task materials (either A or B), students first individually completed the prompts in the Beliefs column using information provided in the Facts column. They then found a partner with a different topic, and worked in pairs to interview each other (Student A states the belief, Student B guesses *true* or *false*, Student A provides the correct answer). When necessary, the experimenters explained problematic vocabulary and clarified the instructions. Each pair was audiorecorded using a digital recorder.

## Analysis

The recordings were transcribed by research assistants and verified by the researchers. In terms of auditory priming, the target AWL words in the primes and prompts were analyzed in terms of correct or incorrect word stress. Stress placement was determined auditorily by using vowel length, vowel intensity, and pitch height to identify the most prominent syllable. For structural priming, the prime and prompt sentences produced during the family task were coded as (a) relative clauses (*after a divorce, men and women have traditionally exhibited standards of living that are different*), (b) prepositional phrases (*after a divorce, men and women have traditionally exhibited standards of living in different ways*), or (c) other modifiers (*after a divorce a man and a woman will have a different standard of living*). The prime and prompt sentences produced during the social relationships task were classified as (a) passives (*conventional jobs like teaching and nursing are given to women more*), (b) actives (*conventional jobs like teaching and nursing are always suitable for women*), or (c) incomplete sentences (*conventional jobs like teaching and nursing to women more than to men*). Because structural priming is based on the presence or absence of constituents or their order in an utterance rather than morphological features (number, tense, aspect), morphological errors (*consistent complaints was reported in 2010*) were not considered.

After the AWL words and structures in the prime and prompt sentences were analyzed, each prime sentence was classified as having (a) both the target structure and stress, (b) the target structure only, and (c) the target stress only. The primes in each category were summed

and a proportion score was obtained (category sum/total primes) for the passives and relative clauses separately. The prompts in each category were also summed and proportion scores were calculated (category sum/total prompts), again separately for the passives and relative clauses. In addition, separate proportion scores were obtained for unprimed completions of prompts across the three categories. Unprimed productions were prompt completions that were not preceded by a prime sentence. The proportion scores for prompt sentences were compared across the prime sentence categories in order to determine whether priming had occurred. The occurrence of priming would be shown if the proportion of prompt sentences with the target forms was greater following prime sentences than in discourse contexts without a prime sentence.

## RESULTS

During the family task, the students produced a total of 94 prime sentences, of which 68% (64 out of 94) contained both a relative clause and a correctly stressed AWL word. Of the remaining prime sentences, 30% (28 out of 94) were produced with a relative clause only, and 2% (2 out of 94) with the AWL word only. A similar pattern was found for the social behavior task, where a total of 89 primes were produced. Of these prime sentences, 86% (76 out of 89) contained both a passive and a correctly stressed AWL word, 13% (12 out of 89) were produced with a passive only, and 1% (1 out of 89) with the AWL word only. This suggested that the priming activities were successful at eliciting the integrated (auditory and structural) primes.

Having classified the primes in terms of their auditory and structural targets, we then considered whether those primes elicited prompt sentences with the same forms. As shown in Table 2, prompt completions that included both the target structure and stress follow-

**TABLE 2**  
**Proportions of Prompt Completions by Prime for Relative Clauses (RC) and Passives**

Prime	Prompt					
	Structure and stress		Structure only		Stress only	
	RC	Passive	RC	Passive	RC	Passive
Structure and stress	.37	.37	.04	.06	.14	.15
Structure only	.05	.02		.02	.09	.01
Stress only	.05	.03			.02	.05
Unprimed	.12	.14		.03	.12	.11

ing an integrated (structure and stress) prime occurred in 37% (21 out of 57) of all prompt completions in the family task and in 37% (37 out of 99) of the prompt completions in the social behavior task. These rates were nearly three times the rate of unprimed productions of the target structure and stress in the family task (12% or 7 out of 57) and in the social behavior task (14% or 14 out of 99), which suggested that priming had occurred. Notably, as Table 2 shows, only integrated primes were effective at eliciting both the structure and the stress pattern in the prompts, as the productions of structure-only or stress-only prompts did not differ substantially from unprimed prompt completion rates.

## DISCUSSION

The results indicate that it is possible to create communicative, collaborative tasks that successfully elicit *both* auditory and structural priming during peer interaction. The participants produced the target structure and the AWL target word as part of the prime sentences. More importantly, these primes were followed by prompt-generated sentences that contained the target stress pattern and structure at the rate that was three times higher than unprimed production of the target structure and stress.

Two of our findings are especially noteworthy. The first is that integrated auditory and structural primes were more successful at eliciting the target forms, compared to stress- and structure-only primes. This is consistent with previous scripted interaction studies which reported greater priming effects when primes and prompts share a key lexical item, such as repeating the lexical verbs in double-object datives (Branigan, Pickering, & Cleland, 2000) and passives (Kim & McDonough, 2008). Our findings suggest that L2 production of target patterns may be facilitated when learners are exposed to models of language that include repetition at multiple levels of language, including phonology, lexis, and structure (Pickering & Garrod, 2004). Integrated patterns of language, with repeated lexis and grammar or repeated grammar and phonology, available to learners through primed interaction, may *guide* their production of novel constructions.

The second noteworthy finding is that the two tasks featured here showed slight differences in their impact on learner production. Although both tasks effectively elicited the target forms, the social behavior task elicited more integrated primes (86%) and more analyzable prompt completions (99) than the family task (68% and 57, respectively). These differences may be related to learners' prior knowledge of and familiarity with the two grammatical structures

studied here (relative clauses and passives). English relative clauses, which were targeted in the family task, may have been less familiar to the participants than English passives, which were targeted in the social behavior task. As a result, they produced more target structures (e.g., passives) during the social behavior task. This suggests that the effectiveness of L2 priming activities may be influenced by the degree of learners' prior knowledge of the target forms (see McDonough, 2006, for lab-based evidence).

To summarize, our findings suggest that collaborative tasks designed to elicit auditory and structural priming during peer interaction have potential for use in L2 classrooms. Integrated priming activities may help teachers create learning opportunities during peer interaction, especially in contexts where providing feedback and customizing input for individual students are not feasible. For example, integrated priming activities similar to those described here could provide native-like language models to learners and allow for learner–learner interaction in teaching situations where opportunities for interaction are limited due to large class sizes, insufficient L2 input outside the classroom, or an emphasis on reading and writing as opposed to listening and speaking. Integrated priming activities can also provide multiple exemplars of target pronunciation and grammar forms in meaningful contexts with a variety of lexical items, with this repeated exposure facilitative of subsequent perception and production (Bybee, 2008; Goldberg & Casenhiser, 2008; Lieven & Tomasello, 2008). The segment that follows illustrates the potential role of collaborative integrated priming activities for modeling and eliciting stress patterns and passives.

A: *Um ... criminals and terri-terrorists are exCLUded from the kind of people allowed to settle in Canada. (structure & stress prime, capital letters designate word stress in target AWL words)*

B: *False.*

A: *Yeah ... Yeah? No, it's true. Because uh Canadian ... [unintelligible] exclude people who have criminal or terrorist pasts.*

B: *Oh ... oh ... ConSIStent complains about racial discrimination were reported in 2010. (prompt = "Consistent complaints\_\_")*

A: *Oh ... it's true.*

B: *Yeah.*

Having confirmed that collaborative tasks can elicit both auditory and structural priming during peer interaction, the next step in our research agenda is to test whether carrying out these activities

positively impacts ESL learners' subsequent production. Collaborative structural priming activities positively impacted EFL learners' subsequent production of target-like *wh*-question forms, as opposed to inter-language question forms (McDonough & Chaikitmongkol, 2010), so we expect that integrated priming activities will promote subsequent production of target-like L2 stress patterns, relative clauses, and passives. This finding would be most relevant to our overall goal of developing pedagogical applications of priming, namely, creating opportunities for learners to produce native-like L2 forms, as opposed to simple or erroneous ones, in the course of collaborative priming activities. Our future studies also aim to clarify the impact of lexical features on the effectiveness of integrated priming activities. In contrast to the great deal of research about the information exchange requirements, task outcome options, and complexity of communicative tasks (e.g. Gilabert, Barón, & Levkina, 2011; Kim, 2009; Nuevo, Adams, & Ross-Feldman, 2011), much less is known about the impact of task features on the effectiveness of collaborative priming activities. We hope that these initially positive findings for integrated priming activities encourage further classroom-based research in other L2 instructional contexts that can help clarify whether priming may be an additional mechanism by which peer interaction facilitates L2 development.

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