

# Syntactic Priming Effects on EFL Learners' Production and Retention of Indirect Questions

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## **Abstract**

**This study examines the impact of syntactic priming on the production and retention of indirect questions by Iranian learners of English as a foreign language (EFL). Eighty learners participated in two experiments investigating the impact of syntactic priming on oral production and retention of indirect questions. Experiment 1 showed that priming resulted in increased production of the target structure by the Experimental groups as compared with production by the Control groups. Experiment 2 showed that the rate of production of the target structure remained significantly higher for participants in the Experimental groups one day later.**

**Key words:** syntactic priming, language production, retention, language learning

## **1. Introduction**

Syntactic priming refers to a tendency to produce or repeat a recently produced or heard structure (Bock, 1986) – that is, the phenomenon by which processing of an utterance is facilitated by processing of another one which shares the same underlying syntactic structure. This facilitation can help understand the nature of syntactic representation (Branigan, 2007). After the discovery of syntactic priming (also called structural persistence and structural priming) over 20 years ago, there have been numerous studies across a wide variety of populations. Syntactic priming has been the focus of studies with children (e.g., Garrod & Clark, 1993; Fisher, 2002; Tomasello, 2000), aphasiacs

(e.g., Saffran & Martin, 1997), bilinguals (e.g., Bernolet, Hartsuiker, & Pickering, 2007; Schoonbaert, Hartsuiker, Pickering, 2007), and second/foreign language learners (e.g., Gries & Wulff, Kim & McDonough, 2008; McDonough, 2006).

Bock (1986) report the first study which specifically used structural priming to investigate the processing and representation of language structures. In her study, speakers repeated prime sentences (transitive and dative structures) and afterwards described target pictures which were semantically unrelated to the prime sentences. The results showed that speakers tended to use an active description of the target picture after an active prime structure

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and a passive description after a passive prime structure. The same effect was observed with dative sentences. Pickering and Ferreira (2008) point out that the results of Bock's study reveal that priming happens automatically and is not related to specific communication purposes or prime-target relationships (Levelt & Kelter, 1982), or discourse factors such as register (Weiner & Labov, 1983).

Bock's (1986) initial finding has encouraged several researchers to investigate the nature of the phenomenon and its linguistic implications in more depth. Branigan, Pickering, Liversedge, Stewart, and Urbach (1995) conclude that syntactic priming can occur within production, within comprehension, and between comprehension and production. Within production, uttering particular syntactic forms might affect the production of subsequent utterances. For example, if a prime is produced that contains a double-object structure (The shopkeeper sold a little girl some chocolate), it increases the probability of participants producing a target with the same structure (The girl handed the man a paintbrush); and the same will happen with alternative structures such as prepositional objects. Within comprehension, Branigan et al. (1995) find priming with locally ambiguous sentences. For example, readers process an «early closure» sentence (While the woman was eating the creamy soup went cold) faster if it is encountered after another «early closure» sentence, and a «late closure» sentence (While the woman was eating the creamy soup the pudding went cold) is read faster immediately after reading another «late closure» sentence (Branigan et al., 1995). With regard to the «comprehension-to-production» priming, Branigan et al. also find that produced sentences are often structurally similar to recently heard utterances. For example, when shopkeepers were asked At what time does your shop

close?, they answered At five o'clock more frequently than Five o'clock, while the question What time does your shop close? was followed by Five o'clock more often than At five o'clock. They point out that a process which is common to both comprehension and production might be the source of priming, although the nature of that source is unclear.

Other studies have addressed the question of durability of syntactic priming. These studies have dealt with the question of whether priming is long lasting and results in implicit learning, or decays over time (Bock & Griffin, 2000; Branigan et al., 1999). Seger (1994) defines implicit learning as involving knowledge which is not accessible to consciousness; it is characterized by being, to some extent, complex and abstract; it happens incidentally as some tasks are being performed, and finally, it is preserved in cases of amnesia (Bock & Griffin, 2000). Bock and Griffin (2000) believe that these four characteristics can be attributed to syntactic priming as well.

Research on syntactic priming (both in a first and second language, L1 and L2 respectively) during the last two decades has focused mainly on the participants' performance when there is a choice between alternative constructions; such as the choice between prepositional-object and double-object (Chang, Dell, Bock, Griffin, 2000), or the choice between active and passive sentences (Bock & Griffin 2000). However, this study focused on a single type of structure: indirect questions in the production of Iranian EFL learners, which seems to be greatly affected by their first language with a quite different structure from English. What follows is a simple exemplification of indirect questions in Persian. Consider the following situation. Someone asks a friend to do something for him and now that person is reporting the request. The original request is:

**Example 1:**

1. Mitooni mashineto biyari?  
 Can you your car bring?  
 Can you bring your car?  
 This request is reported indirectly as either (a) or (b) in English:  
 1. a. He asked me to bring my car.  
 1. b. He asked me if I could bring my car.  
 And directly as:  
 1. c. He asked me «Can you bring your car?»  
 Persian speakers, however, employ two different types of structures when reporting this request in Persian:  
 1.d. Be man goft mashineto biyar.  
 To me told your car bring.  
 He told me you bring your car.  
 1.e. Be man goft mitooni mashineto biyari.  
 To me told can you your car bring.  
 He told me can you bring your car.

In addition to considering the possible effect of syntactic priming on the subsequent production of a particular structure, it is of interest to consider whether syntactic priming effects result in learning the target structure. Consequently, the research questions of the present study can be formulated as follows:

1. Does exposure to indirect questions in L2 increase the likelihood of subsequently producing these structures in L2?
2. Does short term syntactic priming lead to long-term production of indirect questions/?

**2. The Pilot Study**

A pilot study was utilized to evaluate the possible outcomes of the research. The results of the pilot study indicated that L2 learners' level of proficiency plays a key role in the learners' language production involving syntactic priming. The results also showed that Limited English Proficiency (LEP) participants should be excluded from the picture description experiment. This was done because their priming capacity was not formed yet to interpret the underlying message of the pictures. In addition, control groups were

needed to provide a baseline against which the results of the experimental treatment can be compared to find out whether the outcome is due to priming, the level of proficiency, memory effect, or other intervening factors

A researcher developed questionnaire in the form of a preference test, was given to thirty Persian native speakers to see what kind of structures they use when reporting a question or a request. These participants were different from those participating in the main experiments of the study. The questionnaire contained forty sentence triads in Persian which participants were asked to mark the sentence they preferred from among the set of three existing alternatives. The following examples represent two test items of the preference test.

1. a. Milad az doostesh porsid mitooni mashineto biari?  
 Milad from his friend asked can you your car bring. Milad asked his friend «can you bring your car?»  
 1. b. Milad az doostesh porsid ke mitooneh mashineto biareh  
 Milad from his friend asked that can he his car bring Milad asked his friend if he can bring his car.  
 1. c. Milad az doostesh porsid ke to mashineto biar.  
 Milad from his friend asked that you your car bring. Milad asked his friend that you bring your car.  
 2. a. Mina dirooz ketab-ra kharid.  
 Mina yesterday book-OM bought.  
 Mina bought the book yesterday.  
 2. b. Mina dirooz kharid ketab-ra.  
 Mina yesterday book-OM bought.  
 Mina bought the book yesterday.  
 2. c. Dirooz ketabra kharid Mina.  
 Yesterday book-OM bought Mina.  
 Mina bought the book yesterday.

There were twenty sentence triads containing a request (such as triads a thru c in Example 1), and twenty fillers (such as

diads a thru c in Example 2) where participants had to choose between different word orders (see Lotf, 2003). Overall, the pilot study was conducted to adjust the preference test for the main experiments to see whether Persian speakers favor direct or indirect speech when they are reporting a request or question. In addition, the results showed that, when asked to report a request, participants preferred direct reporting 78 percent and indirect reporting 22 percent of the time.

### 3. Experiment 1

Experiment 1 was conducted in order to answer the first research question, that is, whether hearing indirect questions in L2 increases the likelihood of subsequently producing these structures in the second language.

#### 3.1. Method

##### 3.1.1. Participants

The participants of the study were 80 Iranian EFL learners who were studying English at Khorasgan Azad University and Gooyesh Language Institute in Isfahan. These participants were selected from among a larger 135-participant sample after taking Allen's (1992) proficiency test.

To assign the participants into different groups, the following procedures were followed. Forty participants with the highest proficiency scores, that is those participants who scored 144-161 (out of 200 the maximum possible score in the placement test) were placed in the High-proficiency groups. To eliminate the Low-proficiency participants, since they were not able to participate in the experiments which needed higher proficiency levels, the forty participants with scores less than 101 were excluded from the experimentation. Of the remaining fifty five participants, forty were placed in the Mid-proficiency groups because they scored 101-119. This was done to make sure that the High-proficiency

and Mid-proficiency groups were significantly different from each other. The same participants took part in both experiments described below.

The participants of the study were then placed in four groups with respect to proficiency and treatment, namely Experimental High-proficiency, Experimental Mid-proficiency, Control High-proficiency, and Control Mid-proficiency groups. The groups labeled Experimental were those subjected to syntactic priming, while the Control groups provided the baseline.

To ensure the comparability of the Experimental and Control groups, two independent samples t-tests were conducted comparing proficiency scores. The results of the t-test comparing the Experimental High-proficiency ( $M = 150.96$ ,  $SD = 5.91$ ) and Control High-proficiency ( $M = 153.40$ ,  $SD = 4.90$ ) showed no significant difference in proficiency,  $t(38) = 1.43$ ,  $p = .16$ . Similarly, the results of the t-test comparing the Experimental Mid-proficiency ( $M = 110.45$ ,  $SD = 5.58$ ) and Control Mid-proficiency ( $M = 109.25$ ,  $SD = 6.09$ ) showed no significant difference in proficiency scores,  $t(38) = 0.65$ ,  $p = .52$ .

##### 3.1.2. Materials

There were two sets of forty five pictures, one set for the experimenter and one for the participants. The critical or experimental pictures ( $N = 20$ ) depicted a scene where somebody was seen to be requesting or asking something from someone else. This question or request was portrayed on a balloon so that the participants knew they were supposed to report this question/request. For example, someone is asking to talk with the manager, or someone is asking a friend to explain how a cell-phone works, etc. The following is an example of the experimental pictures.

In this picture a young man is showing a cell-phone to his friend and is asking how the cell-phone works.



**Figure 1.** An example of an experimental picture used in the experiments. In this picture a young man is showing a cell-phone to his friend and is asking about how the cell-phone works.

All the participants saw the same set of pictures, but the experimenter's set was different from those of Control and Experimental groups. The experimenter's pictures for the Experimental groups provided the experimenter with the opportunity to produce a prime, that is, the experimenter also had pictures where there was a question or request that had to be reported. For the Control group, the experimenter described a picture that did not require direct reporting and therefore lacked a priming sentence.

In addition to the experimental pictures, another set of pictures ( $N = 25$ ) was used as fillers. The rationale for choosing the fillers was to hide the purpose of the study. In fact the experimenter wanted to make the participants believe that he was interested in investigating the types of structures people used in different situations. Like the experimental pictures, the fillers depicted a scene where people were seen to be involved in some sort of conversation. For example, a police officer is giving directions to people, or while someone is watering the flowers another person is talking about the weather and the flowers. Similarly, the sentences were portrayed by means of balloons. For example, in the following picture a police officer is giving directions to someone.



**Figure 2.** An example of a filler picture used in the experiments. In this picture a police officer is giving directions to someone.

When describing this filler, the experimenter would say: Here, there are some people on the street. It seems that someone is looking for an institute and the police officer is giving them the directions. Of course, like the experimental pictures, the experimenter would not report the sentence on the balloon; however, if participants were supposed to describe the picture, they would have to report the sentence as well.

### 3.1.3. Procedure

Every participant met the experimenter in different sessions. The experiment took place in a quiet room and the participants were given enough time to describe the pictures. Each session lasted between 45 and 60 minutes. First, the experimenter explained the procedure to participants and after he had made sure that the participants were familiar with the procedure, the experiment started. To make sure that the participants were completely familiar with picture description, some trial pictures were described before starting the main part of the experiment. Furthermore, to hide the purpose of the research, the experimenter mentioned that he was interested in the type of sentences that people would use to describe such situations. In this part of the experiment, for providing the participants with the prime, the experimenter initiated a

description. He told them that he would describe a picture and after that the participant had to look at the pictures and choose the one which best matched the situation described by the experimenter. Afterwards, the participants were asked to describe the pictures they had selected. For example, the experimenter may describe a picture in which a student is asking a teacher to explain a point: Here we have a class, all the students have left the class but one of the students is talking with the teacher. She is asking the teacher if he can explain a grammatical point to her.

After the experimenter described the picture, participants were supposed to go through their pictures and describe the one they thought would be most appropriate. For example, the participant may report: Here, we have a store. There are two young men and they are talking about a cell-phone. The man who is standing wonders if his friend can tell him how the cell-phone works.

The experimenter and participants would continue until they described all experimental and filler pictures. To cover the main purpose of the experiment, the experimental and filler pictures were intermixed to eliminate any possible adjacency effect.

The experimenter either described the critical pictures containing an indirect request for the Experimental groups, but the pictures he described to the Control groups did not evoke any instance of direct or indirect reporting. For example, for the Experimental groups, the experimenter would say: Here we have a class. All the students have left, but one of the students is talking with the teacher. The girl in the picture is asking if the teacher can explain a grammatical point to her. For the Control groups, on the other hand, the experimenter would say: Here we have a class and all the students are gone, but it seems that one of the students wants to talk with the teacher

and needs some help with a grammatical problem.

However, it should be noted that the participants' pictures had a balloon which contained the sentence the interlocutors were saying and the participants were told to report the sentence on a balloon as well. For example, for the above picture the sentence on the balloon was: Can you explain how this cell-phone works? For the participants of the control group, no prime of any sort was provided; however, the participants had to report the sentence on a balloon. The balloon was used to achieve maximum consistency among the participants serving as the control group.

#### **3.1.4. Scoring**

A checklist was used as the scoring procedure. Any sentence that the participants produced and contained the target structure was checked. The sentences were coded as «Indirect questions» or «Other.» Sentences which were indirect wh-questions, yes/no questions, or infinitive clauses that contained verbs like ask, request, require, invite, want to know, wonder, etc. were considered acceptable and were scored. For example, the following prime was presented to participants: The student is asking the teacher if he can explain a grammatical point. Evidently, the following target sentences were considered acceptable: The man is asking his friend if he can explain how the cell-phone works. The little boy wants to know when his mother would pick him up.

The man is requesting to talk to his son. For each participant, a mean score was obtained for the whole session. The maximum possible score was twenty.

#### **3.2. Results**

The means for the groups were 14.70 (SD = 2.36), 13.20 (SD = 2.70), 4.80 (SD = 2.07), and 3.95 (SD = 2.28) for the Experimental High-proficiency, Experimental Mid-

proficiency, Control High-proficiency, and Control-mid proficiency groups, respectively.

To address the first research question, which asked about the occurrence of syntactic priming in L2, the data were analyzed using a 2 x 2 analysis of variance with score as the dependent variable and group (Experimental and Control) and proficiency (High and Mid) as independent variables. There was a statistically significant main effect of group,  $F(1, 76) = 327.47$ ,  $p < .01$  with Experimental groups being associated with significantly higher scores ( $M = 13.95$ ,  $SD = 2.62$ ) than Control groups ( $M = 4.37$ ,  $SD = 2.19$ ). Furthermore, a significant main effect was found for proficiency,  $F(1, 76) = 4.93$ ,  $p < .05$ , indicating that more proficient participants had significantly higher scores ( $M = 9.75$ ,  $SD = 5.47$ ) than did less proficient ones ( $M = 8.57$ ,  $SD = 5.29$ ). The interaction between group and proficiency, however, was not statistically significant,  $F(1,76)=0.377$ ,  $p=.54$ .

In sum, the Persian-speaking EFL learners who participated in this study produced more indirect questions when primed for this structure. The results provide the answer to the first research question regarding whether priming results in increased production of indirect questions.

#### 4. Experiment 2

Having established in Experiment 1 that participants' production of the target structure is susceptible to syntactic priming, it was also of great interest to determine whether the effects of priming would persist over a certain period of time (namely 24 hours). This question has been the focus of research in psycholinguistic studies of SLA concerned with whether syntactic priming facilitates retention or implicit learning (see Bock & Griffin, 2000; Seger, 1994). Experiment 2 was designed to answer this particular question: Does syntactic priming lead to the retention of indirect questions in L2?

#### 4.1. Method

##### 4.1.1. Participants

The same participants in Experiment 1 participated in Experiment 2.

##### 4.1.2. Materials

As in Experiment 1, there were two sets of 45 pictures, 20 of which were the experimental pictures. In order to avoid possible memory effects, these were different pictures from those used in Experiment 1. For the rest, these pictures followed similar lines as those in Experiment 1: they depicted a scene where somebody was seen to be asking or requesting something from somebody and the requests were portrayed inside a balloon in the participants' pictures. Unlike in Experiment

1, however, the experimenter's pictures in Experiment 2 were the same for both groups and they did not contain balloons.

##### 4.1.3. Procedure

The participants of Experiment 1 were asked to participate in Experiment 2 the following day. In fact, they took part in this experiment between 18 and 24 hours after having done the first experiment. Like in Experiment 1, participants met the experimenter in a quiet room and they were given enough time to describe the pictures. Sessions lasted between 35 and 50 minutes. The second session was usually shorter than the first one since participants were already familiar with the procedure. Nevertheless, the experimenter explained the procedure before he started testing.

This experiment replicated the procedure followed with the participants of the Control groups in Experiment 1, that is, the experimenter described the picture, but he did not provide any of the participants with a prime for the target structure. After the experimenter finished with his description, participants described their pictures, including reporting the sentences on the balloon.

#### 4.1.4. Scoring

Sentences were coded as «Indirect questions» or «Other» according to the criteria outlined for Experiment 1.

#### 4.2. Results

The means for the groups were 14.95 (SD = 2.80), 14.15 (SD = 2.83), 4.05 (SD = 2.61), and 3.45 (SD = 2.35) for the Experimental High-proficiency, Experimental Mid-proficiency, Control High-proficiency, and Control-mid proficiency respectively, respectively.

Like in Experiment 1, the data were analyzed using a 2 x 2 analysis of variance with score as the dependent variable and group (Experimental and Control) and proficiency (High and Mid) as fixed factors. There was a statistically significant main effect of group  $F(1, 76) = 331.14, p < .01$ . Experimental groups had significantly higher scores ( $M = 14.55, SD = 2.81$ ) than did Control groups ( $M = 3.75, SD = 2.47$ ). No significant main effect was obtained for proficiency,  $F(1,76) = 1.39, p = .24$ , indicating that the more proficient participants ( $M = 9.50, SD = 6.13$ ) produced as many target structures as the less proficient ones ( $M = 8.80, SD = 6.00$ ). The interaction between group and proficiency was also not significant,  $F(1, 76) = 0.03, p = .87$ , indicating that scores were not differentially affected by proficiency level.

It seems, thus, that the effect of the priming session in Experiment 1 was still present at the time participants took part in Experiment 2 since the difference between groups was still significant. However, to specifically look at the development of the priming effects across time and given that proficiency seemed not to play a major role in the priming effects, a 2 x 2 analysis of variance was conducted with score as the dependent variable and experiment (Experiment 1 and Experiment 2) and group (Experimental and Control) as fixed factors. There was no significant main effect of experiment,  $F(1, 156) = 0.001, p = .98$ , that is, there was no significant

difference between the performance of participants in Experiment 1 ( $M = 9.16, SD = 5.38$ ) and Experiment 2 ( $M = 9.15, SD = 6.04$ ). There was a highly significant main effect of group,  $F(1, 156) = 647.18, p < .01$ , that is, participants of Experimental groups had a higher production rate of the target structure ( $M = 14.25, SD = 2.72$ ) than participants of the Control groups ( $M = 4.06, SD = 2.34$ ). Furthermore, the interaction between groups and experiments was not significant, reflecting the fact that the difference between the Experimental and Control groups was the same for both experiments.

In sum, the Iranian EFL learners who had been primed for the target structure in Experiment 1 produced more target structure in Experiment 2 as well which indicates that syntactic priming effects persisted over this period of time. Furthermore, priming effects did not seem to have diminished with time. In addition, as the results show, the L2 learner level of proficiency did not influence the rate of retention.

#### 5. Discussion

Syntactic priming phenomena have been investigated from very different perspectives in the psycholinguistic literature on both first and second language acquisition. In addition to language production, syntactic priming has been researched with respect to issues such as first and second language comprehension, language processing, the mental representation of language among native speakers, bilinguals, and second language learners, and last but not least the impact of syntactic priming on retention or learning (Bock, 1986; Bock & Griffin, 2000; Branigan et al., 1999; Garrod & Clark, 1993; Bernolet, et al., 2007; Gries & Wulff, 1995; Kim McDonough, 2008). In this study, the question of whether syntactic priming would be found in a second language and whether it would result in the retention or learning was scrutinized, taking into account a particular target structure.

The first research question investigated the impact of syntactic priming on the production of the target structure, namely indirect questions, among Persian speaking L2 learners of English. The results obtained from Experiment 1 showed that those participants who had been primed for the target structure did produce more of the target structure than those who had not. This indicates that priming was effective even though it was conducted in a second language and even though it concerned a structure apparently difficult for the learners, judging by the low production of the Control group.

These results support previous research on syntactic priming among second/ foreign language learners, especially Kim and McDonough (2008), who showed the impact of syntactic priming on Korean speaking L2 learners of English production of passive structure. Similarly, they found that, regardless of proficiency level, their participants could be primed to use passive sentences in picture description.

The very reliable boost to the production of indirect questions, which tend to be underrepresented in Persian speakers' production of English, fits the «inverse-preference effects» argument (Pickering & Ferreira, 2008) according to which in any production contexts, structures that are less favored by speakers seem to exhibit higher syntactic or structural priming. These effects might be because of the way speakers process prime structures, or the way they process target structures (see also Hartsuiker & Kolk, 1998; Hartsuiker, Kolk, & Huiskamp, 1999; Scheepers, 2003). The present results show that the same applies to priming studies in second language acquisition research.

The second research question investigated persistence of priming effects. If syntactic priming is to be of benefit to L2 learners, its effects would have to last beyond the priming session. In fact, syntactic priming researchers have paid much attention to the issue of retention or

implicit learning - that is, whether the effects of syntactic priming are long-lasting and result in learning the particular structure (Bock & Griffin, 2000) or they are short-lived and decay over time (Branigan et al., 1999).

The results of Experiment 2 support the first of the two possibilities, that is, syntactic priming effects appear to have resulted in learning of the target structure. Here, the study follows Bock and Griffin's (2000) definition of learning which indicates that learning is «learning to talk» rather than «learning the language;» in other words, the participants of this study learned to use the target structure as shown by their continued high rate of target structure production in Experiment which followed a period of 18 to 24 hours from the priming session in Experiment 1.

Although it is an empirical question whether production of the target structure will remain high well past the 24 hour time period tested here, such a long retention interval is unlikely to be due to short term memory effects or other transitory processes. In fact, 24 hours is a relatively long interval in the context of previous research in this area. For example, Bock and Griffin (2000) show that syntactic priming effects persisted over one or two intervening sentences; this was 10 to 20 sentences in Kaschak, Loney, and Borreggine (2006); and only Saffran and Martin (1997) go beyond the same-day testing showing the persistence of priming effects one week later. On the other hand, studies such as Branigan, et al. (1999), Levelt and Kelter (1982), and Wheeldon and Smith (2003) conclude that syntactic priming decays over time and is, furthermore, short-lived. Branigan, et al. (1999), for example, conclude that priming effects decay rapidly in written production when other structures intervened. Branigan et al. (1999) attribute the differences to the modality they employed: they use writing while Bock and Griffin (2000) use speaking. They believe that the slower

speed of writing may contribute to the short duration of priming in their experiment. However, the most important difference between these two experiments concerns the nature of the tasks. In contrast to Bock and Griffin (2000), who use picture description, Branigan et al. (1999) employ a sentence completion task where participants themselves partly generated the prime sentences. In the picture description task, however, participants must instead repeat the provided prime sentences.

The results of Experiment 2 fit well with the findings of long duration of the priming effects in oral picture description. The fact that participants of Experiment 1 could produce the target structure in Experiment 2 (in the absence of priming) shows that syntactic priming effects persisted well over time. The results confirm and strengthen Bock and Griffin's (2000) interpretation of the priming effects being the result of implicit-learning. Evidently, as Pickering and Ferreira (2008) point out, the learning component of the implicit-learning argument requires that priming effects be long-lived – a condition that is met in this case. Furthermore, intuitively, one expects learning to affect future behavior in some way, which is precisely what this study finds in both experiments.

## 6. General conclusions

The data clearly show that priming can take place in a second/foreign language. Based on these findings several lines of enquiry suggest themselves. For example, one recurring theme in L2 research is the issue of cross-linguistic syntactic integration (De Bot, 1992; Ullman, 2001), that is, to what extent the two languages of a bilingual are separate. It should be possible to address this question using a syntactic priming paradigm by looking at whether bilinguals or second/foreign language learners can be primed by structures in one of their languages, and expect the target structure to be produced in the other language. If so, it would mean learners are making use of the

same mechanisms to process the two languages (see Hartsuiker, Pickering, & Veltkamp, 2004 for an investigation of the same issue among Spanish-English bilinguals).

The role of proficiency in priming effects is yet another potentially interesting area of research in that it could help determine to what extent new structures can be «acquired» through priming. Still another promising and fruitful line of research using syntactic priming methodology can be the investigation of the role syntactic priming plays in the implicit learning of particular structures. This line of research will shed more light on mental processes involved in learning a second/foreign language.

Furthermore, syntactic priming can have a very practical use in the classroom. For example, in order to introduce grammar points, the teacher can prime the structure and then expect students to use that particular structure in their language production. This could be particularly helpful with structures that are less favored by the learners' first language. In Persian, for example, in addition to indirect speech, passives, tag questions, and causatives are among the less favored structures. These are, therefore, suitable areas for further investigation on syntactic priming and, possibly, for improvement of learning outcomes.

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