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**The Mental Representation of Crosslinguistically  
Different Structures.  
The case of *si*-causative passives  
in Italian-English Late Bilinguals.**

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*“Da Venezia ho ricevuto gli insegnamenti più preziosi della vita;  
da Venezia sembra di uscirmene adesso  
come accresciuto dopo un lavoro”*

*“From Venice I received the most valuable lessons of life,  
on leaving Venice I feel like I am grown after a work”*

*Amedeo Modigliani*

## STRUCTURE

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# **The Mental Representation of Crosslinguistically Different Structures.**

## **The case of si-causative passives in Italian-English Late Bilinguals.**

### **Abstract**

This study uses a syntactic priming paradigm to investigate whether Italian-English bilinguals represent crosslinguistically similar and different structures as shared between languages. Both Italian and English have active sentences and passive sentences with an auxiliary (i.e. *essere/be* and *venire/get*). In addition to these passives, Italian also has *si*-causative passives which crucially do not have a corresponding English construction.

If late bilinguals unsparingly share representations of non-corresponding structures across languages (Hwang et al., 2018), then Italian *si*-causative passives (e.g. *Il figlio si fa aiutare dal papà per la verifica*) should be equally effective at priming English passives as *venire*-passives.

Participants were asked to read and type out one filler and one prime sentence in Italian. Then, they were presented with one target picture and a verb that they had to use for the picture-description task in English. Participants produced equal number of passives after *venire*- and *si-causative*-passive primes. These results are consistent with Hartsuiker et al. 's (2004) *Shared-Syntax Account*, suggesting that proficient speakers do share syntactic information for the languages that they master, both with regard to crosslinguistically similar and different structures.

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**Keywords:** *Priming; Crosslinguistic Priming; Bilingualism; Shared-Syntax Account; Separated-Syntax Account; Acquisition; Second Language Acquisition; Italian Si-Causative Passive.*

## ITALIAN SUMMARY

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Il *priming* sintattico è un effetto per il quale l'esposizione ad un dato stimolo linguistico influenza la risposta a successivi input. Pertanto, un effetto di *priming* si osserverebbe ogniqualvolta che, a seguito dell'esposizione ad una specifica struttura sintattica, si verifici la ripetizione della medesima in compiti di produzione. Questo paradigma è usato nella ricerca psicolinguistica, e in particolar modo nel campo del bilinguismo, per comprendere se i sistemi di rappresentazione sintattica della lingua nativa (L1) e di una lingua successivamente acquisita (L2) siano integrati e dunque, condivisi.

L'esperimento cross-linguistico presentato in questa tesi si rivolge a parlanti nativi italiani (L1) con intermedi o avanzati livelli di competenza in inglese (L2) al fine di indagare la natura delle rappresentazioni sintattiche per strutture corrispondenti (frasi attive e passive con ausiliare *venire*) e non corrispondenti (frasi passive con *si* causativo) tra le lingue di competenza dei soggetti testati.

Nello specifico, se i soggetti del campione condividessero la rappresentazione per strutture tipologicamente differenti tra italiano e inglese, allora si osserverebbe un effetto di *priming* sia a seguito dell'esposizione a frasi passive con ausiliare *venire*, sia a seguito di *prime* passivi con struttura causativa. In altre parole, si osserverebbe l'occorrenza di un maggior numero di frasi passive inglesi in produzione anche quando il *prime* non presenta alcuna diretta corrispondenza tra la L1 e la L2 dei soggetti partecipanti.

L'ipotesi è supportata dallo *Shared-Syntax Account* (Hartsuiker et al., 2014), secondo il quale l'esposizione ad un *lemma* comporterebbe l'attivazione di nodi *concettuali*, connessi al messaggio attivato dall'input; di nodi *categorici*, che ne definiscono la categoria grammaticale di appartenenza; di nodi *combinatori*, rispetto alle strutture sintattiche in cui il lemma attivato può occorrere, e di nodi *linguistici*. All'inizio del processo di acquisizione di una L2 i parlanti rappresenterebbero i *lemmi* come *specifici* rispetto ad una o all'altra lingua e dunque, isolati. Con l'aumentare della competenza nella L2, lo *Shared Syntax Model* sviluppato da Hartsuiker e colleghi (2014) prevedrebbe che il sistema di rappresentazione della

L1 e della L2 sia sempre più integrato e di conseguenza, che i nodi connessi ad un determinato lemma siano sempre più condivisi per le lingue padroneggiate. In opposizione a questo modello, il *Separate-Syntax Account* prevede che la rappresentazione delle informazioni sintattiche relative a una o all'altra lingua sia *language specific*.

Diversi studi hanno osservato come l'effetto *priming* si verifichi con la stessa intensità sia per una singola lingua che tra due lingue, nonché in diverse direzioni (e cioè, dalla L1 alla L2 o viceversa) e con diverse strutture sintattiche. Tipicamente, per adoperare il *priming* sintattico in un paradigma sperimentale è necessario selezionare strutture sintattiche che presentino due alternative di eguale significato: strutture transitive attive e passive o in inglese, si adoperano comunemente le strutture dative doppio oggetto e preposizionali; siano esse cross-linguisticamente corrispondenti e non.

Nello specifico, Hwang e colleghi (2018) hanno dimostrato che l'integrazione delle rappresentazioni sintattiche si verifica anche per lingue tipologicamente differenti.

Sulla base di questi risultati, lo studio presentato in questa tesi mira ad indagare la struttura passiva italiana con *si* causativo, non corrispondente tra italiano e inglese: es. *Il figlio si fa aiutare dal papà per la verifica*.

Lo studio è stato diviso in tre fasi: i) una fase di *item-norming*; ii) la fase di *pilot* e iii) l'esperimento di *priming* cross-linguistico. A fronte delle particolari circostanze, ognuna di queste fasi è stata svolta da remoto tramite l'utilizzo di server specifici quali Qualtrics e Pavlovia.org.

La fase di *item norming* è stata svolta allo scopo di valutare l'accettabilità delle frasi passive con *si* causativo da parte di parlanti nativi. Ai 14 partecipanti coinvolti in questa sessione è stato inviato un link tramite e-mail, che reindirizzava al questionario da svolgersi sulla piattaforma Qualtrics. I risultati incoraggianti hanno permesso di mantenere la condizione sperimentale passiva con *si* causativo, inserita nel materiale somministrato durante la fase di *pilot* e durante l'esperimento.

Il materiale, composto da un totale di 24 item sperimentali, 24 immagini target e 72 *filler* item, è stato costruito come segue: i 24 item sperimentali si componevano di i) 1 frase *filler* con verbo intransitivo, ii) 3 frasi *prime* in ognuna

delle condizioni sperimentali e iii) 1 immagine target accompagnata da un verbo, al fine di elicitare la descrizione della scena rappresentata.

Il disegno sperimentale (3x1 *Latin Square*) prevedeva infatti che ogni item avesse 1 singola condizione di *animacy*; e cioè, ogni attore presentato nelle frasi *prime* e nelle immagini era *umano e animato*, e 3 condizioni sintattiche: i) transitiva attiva (es. *Il papà aiuta il figlio per la verifica*); ii) transitiva passiva con ausiliare *venire*: (es. *Il figlio viene aiutato dal papà per la verifica*) e iii) transitiva passiva con struttura causativa: (es. *Il figlio si fa aiutare dal papà per la verifica*).

La decisione di mantenere una singola condizione di *animacy* per tutti gli item è dovuta alle costrizioni semantiche delle passive con *si* causativo. Infatti, dalle valutazioni ottenute dai parlanti nativi si è evinto che queste frasi risultano plausibili ed accettabili (anche quando svincolate da un preciso contesto) solo se il paziente e l'agente, recipienti e iniziatori dell'azione, sono umani e animati. Queste peculiari strutture sintattiche non solo presentano lo stesso ordine di ruoli tematici delle frasi passive regolari con ausiliare *essere* e *venire* (paziente + VP + agente), ma ne condividono anche il movimento sintattico (Manetti, Belletti, 2015). Per questo motivo, si ipotizza che l'effetto di *priming* osservato dopo l'esposizione ad un *prime* in questa specifica condizione sia simile all'effetto ottenuto previa esposizione a input passivi con ausiliare *venire*, corrispondenti tra italiano e inglese.

Sia durante la fase di *pilot* e che durante l'esperimento cross-linguistico è stata adottata la medesima procedura: ai partecipanti reclutati è stato chiesto di leggere e copiare le frasi presentate in italiano (*filler* item e *prime* item in ognuna delle tre condizioni) e di descrivere l'immagine target in inglese, utilizzando il verbo suggerito sullo schermo. Il *pilot* dell'esperimento è stato essenziale per verificare che le istruzioni fossero sufficientemente chiare e che non ci fossero malfunzionamenti tecnologici sulle piattaforme utilizzate.

L'esperimento cross-linguistico è stato successivamente diviso in due fasi, di una durata totale di 30 minuti. Innanzitutto, è stata richiesta la compilazione di un questionario linguistico (*Language Profile Questionnaire*, Vann et al., 2020) al fine di valutare il background educativo e il livello di competenza dei partecipanti, nonché la frequenza di esposizione all'input linguistico, sia in termini di uso che di contatto. Dopodiché, ai partecipanti è stato assegnato un ID personale nel rispetto delle



normative sulla privacy ed è stato inviato loro un link che li reindirizzava a Qualtrics, per l'accettazione del consenso informato, e successivamente a Pavlovia.org, per la somministrazione dell'esperimento.

35 parlanti nativi italiani e apprendenti inglese L2 (12 uomini; 23 donne, età media: 27:8) hanno volontariamente accettato di prendere parte allo studio. Tra questi, 2 soggetti hanno dichiarato di vivere in uno stato diverso da quello di origine al momento della somministrazione dell'esperimento. I partecipanti coinvolti hanno confermato di padroneggiare la lingua con buoni (B1-B2) o avanzati (C1-C2) livelli di competenza secondo il Quadro Comune Europeo di Riferimento per la conoscenza delle lingue (QCER).

5 soggetti sono stati esclusi dall'analisi dei dati poiché lo svolgimento del task non era in linea con le istruzioni fornite. I 30 partecipanti testati hanno prodotto un'una maggior percentuale di frasi passive inglesi a seguito dell'esposizione a i) *prime* passivi con ausiliare *venire* e a ii) *prime* passivi con *si* causativo, se paragonate alla proporzione media di frasi passive prodotte dopo l'esposizione ad un *prime* attivo. Pertanto, i risultati confermano quanto ipotizzato e sono in linea con lo *Shared-Syntax Account* (Hartsuiker et al., 2014). È dunque possibile affermare che la rappresentazione sintattica in parlanti bilingui con intermedi e/o avanzati livelli di competenza nella L2 sia condivisa sia per strutture cross-linguisticamente simili che per strutture tipologicamente differenti.

I risultati sono stati ulteriormente analizzati tenendo in considerazione il livello di competenza dichiarato dai partecipanti: dall'analisi dei dati è possibile osservare un effetto di *priming* maggiore in apprendenti inglese con più alti livelli di competenza nella L2 (C1-C2).

Dall'analisi dei risultati, inoltre, è stato osservato che la natura dell'effetto *priming* è effettivamente cumulativa: gli item presenti nella seconda metà di ognuna delle sei liste (randomizzate e controbilanciate) hanno prodotto un maggior effetto di *priming*, se paragonati agli item occorrenti nella prima metà di ogni trial.

Per concludere, è stato svolto un test statistico (t-test) per calcolare la differenza tra la media di frasi passive inglesi prodotte i) dopo l'esposizione ad un *prime* attivo e ii) dopo l'esposizione ad un *prime* passivo in italiano, sia esso cross-linguisticamente corrispondente e non. Dai risultati del test è possibile affermare

che i partecipanti testati hanno subito un maggior effetto di *priming* a seguito dell'esposizione ad una struttura passiva e quindi, che la percentuale di frasi passive prodotte dopo tali condizioni è significativamente maggiore rispetto a quella di frasi passive prodotte previa esposizione ad un *prime* attivo. Al contrario, non si osserva alcuna differenza significativa tra la media di passive prodotte dopo un *prime* passivo regolare (*venire*) e dopo un *prime* passivo con *si* causativo.

Quanto evinto è dunque in linea con le ipotesi dell'esperimento, nonché con lo *Shared-Syntax Account* (Hartsuiker et al., 2014) e con quanto affermato da Hwang e colleghi (2018), e cioè che la rappresentazione sintattica della L1 e la L2 è condivisa in parlanti bilingui con buoni livelli di competenza, siano le due lingue cross-linguisticamente simili o differenti.

## INTRODUCTION

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When speakers are exposed to a specific syntactic structure and are subsequently asked to process a sentence, they commonly tend to maintain the mentally-represented syntactic information and to repeat it over time.

This peculiar phenomenon is typically referred to as *syntactic priming* and has been largely investigated in the field of psycholinguistics and more specifically, in the research on bilingualism, with the purpose to ascertain the nature of bilinguals' mental representations. With the term *bilinguals*, scholars commonly refer to speakers who master a first, dominant language (L1) from a very early age and a later acquired second language (L2).

The study presented in this dissertation aims at a deeper understanding of the nature of Italian-English bilinguals' mental representations with regard to non-correspondent structures between Italian and English, i.e. *si-causative* passive sentences (e.g. *Il figlio si fa aiutare dal papà per la verifica*).

*Si-causative* passives present syntactical and semantical dissimilarities with respect to *venire* passives in Italian. In fact, they present the same order of thematic roles and are derived by the same syntactic movement of copular and *venire* passives, as the patient is in sentence-head position and the agent is in sentence-final position within a prepositional phrase (Manetti & Belletti, 2015). Yet, they are characterized by the presence of a reflexive pronoun (*si*) and the auxiliary *fare* within the VP.

For this reason, *si-causative* passives seem to entail specific semantic constraints, as these utterances are pragmatically acceptable when the patient is animate and the action is therefore willingly received by the recipient. We decided to include *si-causative* passive sentences in our experiment, as they do not present any direct translation in English and because we were interested in assessing the extent to which Italian L2 learners share the syntactic representation of crosslinguistically non-correspondent structures.

Hartsuiker et al. (2014) developed a model of shared syntax (*Shared-Syntax Account*) which illustrates how bilinguals abstractly represent syntactic information with regard to the languages that they master.

According to their model, at the beginning of language acquisition syntactic information is stored and processed as language-specific and subsequently, as an effect of increasing proficiency, the mental-representation system becomes always more integrated and shared across languages.

The crosslinguistic priming paradigm is commonly used to investigate how language is parsed and processed in bilinguals' brains and in 2018, Hwang et al. found that not only does priming occur between typologically similar languages, but its magnitude was revealed to be significantly strong even when languages are not syntactically correspondent.

Along this line, we structured a crosslinguistic priming experiment with the purpose to investigate the nature of syntactic information with respect to non-correspondent syntactic structures between Italian (participants' L1) and English (L2). The goal of the study presented in this dissertation is therefore to assess the extent to which syntax is shared in proficient Italian-English bilinguals and moreover, we aimed at contributing to the psycholinguistics literature, by taking into account Italian, a language which has not been deeply investigated in the field of psycholinguistics so far.

In the first chapter, we introduce a review of the literature which is primarily focused on (crosslinguistic) priming. We furthermore provide an explanation and a readapted representation of Hartsuiker et al. 's (2014) model of *shared syntax*, followed by an explanation of the counterposed *Separate-Syntax Account*. Additionally, we included a linguistic analysis of the syntactic structures adopted in our study (*si-causative passives*) and to conclude, we review the major approaches to second-language acquisition (SLA).

In the second chapter, we present an overview of the methods and results of the two preliminary experimental phases: the *item-norming* phase, which served to assess whether *si-causative passives* were accepted by Italian native speakers when not related to a specific pragmatic context, and the *pilot* phase which allowed us to

make some initial assumption on the strength of priming effect in *pilot*-participants, and to ensure that the task was straightforward and unequivocal.

In chapter three, we provide an overview of the crosslinguistic priming experiment: we introduce the method of the study, i.e. the participants' demographic data, the material design, the procedure and the scoring schemes. To conclude, we present and discuss our results.

# CHAPTER ONE

## *Review of the Literature*

---

*"Linguistics is that branch of psychology that focuses its attention on one specific cognitive domain and one faculty of mind, the language faculty"*  
(Chomsky 1980, p. 4).

### **Introduction**

*Uniqueness, variability and universality* are the most exceptional features of human language. Every human being was born with the *unique* ability of acquiring, comprehending and producing a potentially infinite and *various* number of utterances, i.e. combinations of meaning and sounds which allow speakers to interact.

Although each existing language can be distinguished with regard to its surface structure, i.e. its phonological, morphological and syntactical properties, the parameters which define the deep structure of a language are *universally* shared. In fact, to each language belong semantically denoted phrases and precise syntactic parameters that speakers abstractly represent in their innate mental grammar.

Thus, the science of linguistics aims to investigate the nature of human language and its parameters with various approaches, in order to shed light on human cognitive abilities and mental faculties. This dissertation will mostly consider the approach of psycholinguistics, which specifically focuses on the systems that underlie the processing and parsing of language with regard to language comprehension, production and acquisition.

The present study will focus on Italian L2 learners of English (L2ers) with the purpose to investigate the nature of abstract representations accounting for structures that are not correspondent between languages. Specifically, Italian *si-causative passive* sentences will be tested within a crosslinguistic priming paradigm.

Studies on bilingualism primarily aim to develop an insight into bilinguals' mental representations. It is important to specify that with the term *bilinguals*, psycholinguists commonly refer to speakers who master more than one language. Bilinguals, if not balanced, usually master a dominant language (L1) and a second language (L2) in which they may be more or less proficient, depending on the age of acquisition, the frequency of exposure to the input, as well as on the type of input received.

Interestingly, scholars who are concerned with bilingualism and Second Language Acquisition (SLA) such as Schwarz and Sprouse (1994, p.41) suggest that the initial state of L2 acquisition and the final state of L1 acquisition may coincide and for this reason, the initial states of bilinguals' first and second language are fundamentally different, as the first input of the L2 is originally driven (and influenced) by speakers' target language.

In their study (1994), Schwarz and Sprouse set up an experiment with the purpose to understand the extent to which participants' knowledge of their L2 is affected by the syntactic properties of their L1.

They therefore suggested the *Full Transfer/Full Access hypothesis*, according to which second language learners initially *transfer* the parameters and the syntactic properties of their L1 into their L2 and subsequently, the *full access* to their Universal Grammar (UG) allow them to reset the parameters of the to-be-acquired language.

Conceivably, similarities between speakers' first and second language boost the process of language acquisition, as speakers fully transfer similar syntactic properties from their L1 into their L2.

An influential contribution in the study of bilinguals' mental representations was given by Hartsuiker et al. (2004) and their model of *shared syntax*.

According to the *Shared-Syntax Account*, bilingual speakers with high level of proficiency in their L2 activate combinatorial nodes which are shared across the languages that they master. This model is counterposed to the *Separate-Syntax Account*, according to which mental representations and therefore, combinatorial nodes are language specific (Hartsuiker et al., 2004).

### **1.1. The Priming Paradigm: a method for the investigation of mental representations**

A priming effect can be said to occur when speakers repeat a syntactic structure to which they were previously exposed. This effect can be observed in natural speech as well as in controlled contexts, such as specifically designed priming experiments that provide evidence for the persistence of syntax over time, as speakers retain syntactic (and semantic) information across sentences that share the same syntactic and functional relations (Bock, 1986).

Commonly, alternating syntactic structures are selected in priming experiments, as for instance active and passive transitive sentences or double-object and prepositional dative sentences in English.

To date, the priming paradigm has been demonstrated to be the most preferred tool for the investigation of mental representations, as it allows to measure speakers' behavioral responses to manipulated linguistic inputs (Branigan and Pickering, 2017).

In their study, Branigan and Pickering (2017, p.2) argued that priming should be preferred to acceptability tasks, as it helps linguists to understand how language is processed and parsed and therefore, it provides a deeper insight into the nature of linguistic representations.

A great advantage of this paradigm is that it accounts both for semantic and syntax, since its effects can be observed across semantically related and unrelated utterances (Pickering & Branigan, 2017, pp. 1-2).

Moreover, the tendency of speakers to repeat a previously heard syntactic structure has been shown to occur both within- and between-languages, with no significant differences in the magnitude of the priming effect.

The first scholar who observed this effect was Bock (1986), who set up three experiments using two alternating syntactic structures, i.e. transitive sentences (actives and passives) and dative sentences (prepositional datives and double object datives).

Bock's findings were revealing and compelling, as the magnitude of priming was demonstrated to be significantly strong between syntactically alternating



structures, regardless of the lexical or conceptual content of prime and target utterances (Bock, 1986, p.378).

Although Bock observed that the lexical repetition between prime and target sentences boosted and therefore enhanced the magnitude of priming effect (*Lexical Boost Effect*, Pickering & Branigan, 1998), it is conceivable to conclude that priming occurs independently of the pragmatic or semantic features of utterances and that it is in fact driven by the “syntactic processing system” (Bock & Koch, 1989, p.157).

To date, a large and growing body of literature has used the priming paradigm with different populations of speakers, such as monolinguals, bilinguals, L2 learners, adults and children or even aphasic speakers with the purpose to shed light on the mechanisms and systems that control (and allow) language processing.

In 1998, Pickering and Branigan constructed five experiments in order to investigate the representation of syntactic information, i.e. they specifically focused on the representations of verbs.

The purpose of their study was to test and therefore extend Roelofs’ model (1992, 1993) for language production, according to which lexical entries and syntactic information are connected in speakers’ mental representations, but separately accessed.

Pickering and Branigan (1998, pp. 633-635) suggested an integration of Roelofs’ model: According to them, verbs activate i) category information, as they belong to the grammatical category of verbs; ii) featural information, as they can be used with different tenses, aspects and numbers and iii) combinatorial information, as verbs can occur in different syntactic structures: For instance, the English verb “give” can occur in double-object dative sentences (NP VP NP<sub>indirect object</sub> NP<sub>direct object</sub>) as well as in prepositional dative sentences (NP VP NP<sub>direct object</sub> PP<sub>indirect object</sub>).

In order to provide evidence for this integration, Pickering and Branigan (1998) used a completion task within a priming paradigm.

Their findings demonstrated that speakers tend to repeat the syntactic structures to which they were previously exposed, regardless of the verb-type or lexical information entailed in the utterances.

However, a lexical boost effect (Pickering, Branigan, 1998) was observed, as the repetition of lexical information across prime and target sentences was found to enhance the magnitude of priming effect.

In addition to this, Branigan and Pickering (1998, p. 645) manipulated the aspects and tenses of prime and target verbs and surprisingly, no variation in the strength of priming was observed.

Similarly, Bencini and Valian (2008) designed a priming-paradigm experiment to investigate the nature of syntactic representations with a different population of speakers, i.e. 3-year-old children.

The purpose of their study was to contrast two opposite accounts with regard to language acquisition, i.e. the *Lexical-Specificity Account* and the *Early-Abstraction Account* (Bencini & Valian, 2008, p.97). Indeed, not only does structural priming provide a great evidence for language abstraction, but it also sheds light on the cognitive systems which underlie language acquisition.

In their study, Bencini and Valian (2008) used alternating transitive sentences, i.e. transitive active and passive sentences, with 53 monolingual, English young children (M<sub>age</sub> 3;2). They found a strong priming effect in the production of passive sentences after prior exposure to passive primes and their results were consistent with the *Early-Abstraction Account*, according to which language is abstractly represented and combinatorial nodes are activated since the earliest stages of language acquisition (Bencini and Valian, 2008, p. 97).

A further fascinating study on the nature of priming was conducted by Ziegler et al. (2019), who aimed to replicate Bock and Loebell's (1990) study in order to review their findings.

Importantly, it must be pointed out that Bock and Loebell (1990) used passive- and *by*-locative sentences within a priming paradigm and for this reason, Ziegler et al. (2019) argued that the strong priming effect which had been observed in their study was likely to be boosted by the presence of the prepositional phrase *by* both in the *passive*- and the *locative* condition.

In their study, Ziegler et al. (2019) added one experimental condition, i.e. non-*by*-locative sentences. Thus, material was composed of four prime conditions (active and full-passive transitives, *by*-locative and non-*by*-locative sentences) with

the purpose to observe whether non-*by*-locative sentences would have primed passives to the same extent as *by*-locative sentences primed the production of passives in Bock and Loebell's study (1990).

Interestingly, Ziegler et al. (2019) found no priming effect occurring after prior exposure to non-*by*-locative sentences and therefore, their results provide evidence for priming being driven by shared syntactic properties across primes and targets, independently of semantic and pragmatic repetition, even if a lexical repetition between the sentences may strength its magnitude.

In the following section of this chapter we will discuss the crosslinguistic priming paradigm and review some selected and relevant studies for the purpose of the present dissertation.

## **1.2. Crosslinguistic Priming: do bilinguals share syntax between languages?**

A large body of the psycholinguistics literature has demonstrated that priming occurs when speakers are exposed to a manipulated linguistic input (the prime) and asked to process a target stimulus entailing the same (or similar) syntactic properties and that its magnitude does not significantly vary when speakers are primed within- or between-languages (Pickering and Branigan, 2017, p. 6).

Priming experiments which entail speakers' L1 and L2 are commonly referred to as crosslinguistic priming experiments and scholars mainly use them to investigate how syntax is represented and processed in bilinguals' brains, i.e. whether syntactic information is shared across languages or are language specific.

In 2004, Hartsuiker et al. carried out a study using a crosslinguistic priming paradigm with the purpose to shed light on the nature of abstract representations in bilingual speakers and to observe whether syntax *is* or *is not* shared between languages.

They recruited Spanish-English bilingual participants who were primed with 32 active and passive transitive sentences.

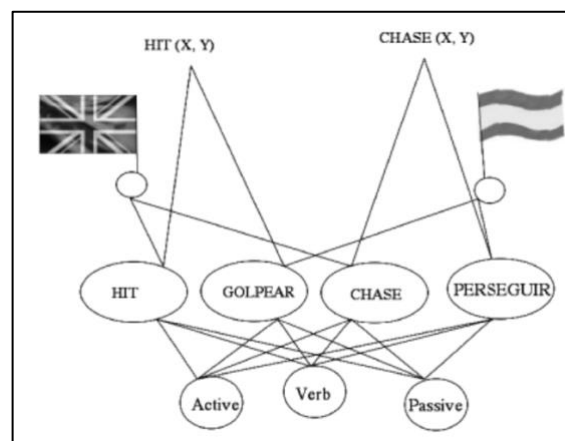
In their material, Hartsuiker et al. (2004) manipulated *animacy* (16 patients were animate and 16 inanimate) and balanced the position of the agent and the patient in the target images.

A picture-description task was used, in order to observe whether priming was occurring at the same degree both within- and between languages. If so, their results would be consistent with the *Shared-Syntax Account* (Hartsuiker et al. 2004), according to which bilinguals' system of syntactic representations becomes always more integrated as an effect of increasing proficiency.

Their results suggested that speakers do actually share syntactic information between the languages that they master, hence Hartsuiker et al. 's (2004) findings were consistent with the *Shared-Syntax Account*, as a priming effect was observed to occur with the same magnitude both within- and between languages.

According to the *Shared-Syntax Account* (Hartsuiker et al., 2004), the variable which essentially predicts the extent to which bilinguals share syntactic information between languages is *proficiency*. Hence, low-proficiency speakers presumably store syntactic information of their L1 and L2 as language specific and thus, separate between languages. Thereafter, as an effect of developing proficiency speakers start sharing syntactic information between languages.

The following figure is taken from Hartsuiker et al. (2004) and represents their model of shared syntax:



**Fig. 1:** Hartsuiker et al., 2004, p. 413 – *The Shared Syntax Account*

Conforming to this model, the two English verbs *hit* and *chase*, as well as the correspondent Spanish *golpear* (hit) and *perseguir* (chase), are connected to i) conceptual nodes, with regard to the *message* (or concept) that the lemma activates;

ii) category nodes, as they belong to the grammatical category of verbs; iii) combinatorial nodes, according to the syntactic structures in which they can occur (active and passive transitive sentences) and iv) language nodes, i.e. Spanish and English (Hartsuiker et al., 2004, pp. 412-413).

Conceivably, if syntax was shared between languages, proficient speakers should not represent syntactic information as language specific, rather they should represent them as shared between languages.

Figure 2 and 3 illustrate a readapted version of Hartsuiker’s shared-syntax model (2004) which accounts for the syntactic structures entailed in our study.

In fact, we considered both correspondent and non-correspondent structures between Italian (participants’ L1) and English (L2). As regards crosslinguistically different structures, we selected Italian *si-causative* passive sentences, such as:

(1) “*Il figlio si fa aiutare dal papà per la verifica*”.

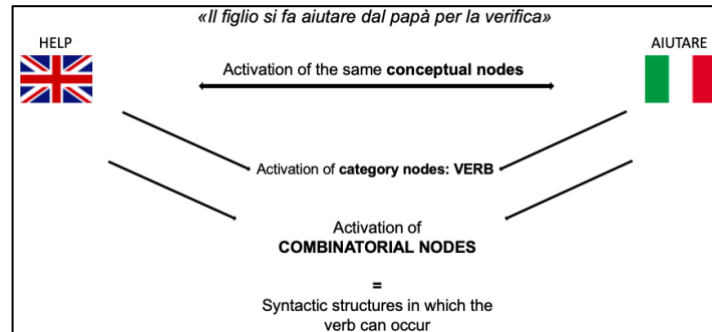
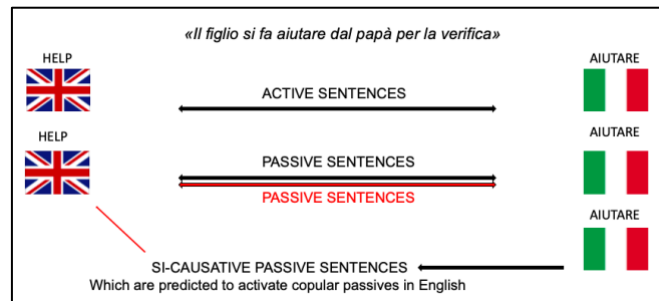


Fig.2. Readapted model of shared syntax based on Hartsuiker et al. (2004).

In keeping with the *Shared-Syntax Account*, the Italian verb *aiutare* activates the same conceptual nodes in Italian and English (X;Y), as well as correspondent category- and combinatorial nodes. Hence, if speakers shared syntactic information between their first and second language, the Italian lemma *aiutare* would simultaneously activate the English lemma *help* and its nodes.

Specifically, the input would activate combinatorial nodes which connect the lemma to the *active* and *passive* structure both in Italian and English.

However, as figure 3 illustrates, the Italian verb *aiutare* would also be connected to the *si*-causative syntactic structure which has no direct translation in English.



**Fig.3.** Readapted model of shared syntax based on Hartsuiker et al. (2004).

Likely, the exposure to this structure would activate the representation of copular (or *get*) passives in English, as the two structures share the same order of syntactic and thematic roles.

We therefore predict that *si*-causative passives prime the production of copular (or *get*) passives in English.

However, if no priming effect was observed after prior exposure to *si*-causative primes in Italian, results would demonstrate that syntactic information is language-specific and therefore, they would be consistent with the *Separate-Syntax Account*.

A large number of studies has demonstrated that bilinguals *do* share syntactic information between languages (see Hartsuiker et al., 2004; Schoonbaert et al., 2007; Bernolet et al., 2013; Hartsuiker et al., 2016; van-Gompel et al., 2017).

In particular, Schoonbaert et al. (2007) constructed a priming study to assess the extent to which syntactic- and lexical information is shared in Dutch-English bilinguals.

Their study consisted of four priming experiments which aimed to test whether priming could be observed between languages and the extent to which it is boosted by lexical repetitions between prime and target sentences.

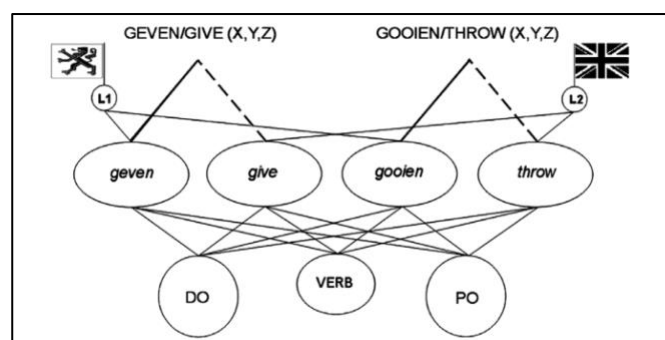
Specifically, experiment 1 and 2 were within-language priming experiments, whereas experiment 3 and 4 were crosslinguistic priming experiments in both directions (L1 to L2 and L2 to L1).

Only *unbalanced* bilinguals took part in the study and they were primed with alternating syntactic structures, i.e. prepositional-object (PO) and double-object prime sentences (DO).

Their results were in line with the *Shared-Syntax Account*, as a strong prime effect was observed in the four experiments and therefore, the magnitude of priming was demonstrated to be independent of the languages entailed in the task and of the repetition of lexical entries between primes and targets.

Interestingly, a lexical-boost effect (Pickering, Branigan, 1998) was only observed in Experiment 3 (between-language priming from L1 to L2), whereas speakers who were primed in opposite direction (L2-L1) did not seem to be affected by the presence of translation equivalents across the experimental stimuli.

This peculiar result allowed Shoonbaert et al. (2007) to suggest an integration of Hartsuiker’s *Shared-Syntax Account* (Hartsuiker et al., 2004), as in Figure 4 illustrates:



**Fig. 4:** Shoonbaert et al.'s (2007, p. 165) integration of Hartsuiker et al.'s (2004) model of *shared-syntax*.

Shoonbaert et al.'s (2007, p.165) integration of the shared syntax model accounts for the systems which underlie language processing in bilingualism.

They concluded that combinatorial nodes of the L1 are more likely to be activated by priming inputs than L2 nodes are and for this reason, the magnitude of priming may be stronger in the L1-L2 direction.

Many studies have demonstrated that priming and proficiency interact. On this basis, Bernolet et al. (2013) conducted a crosslinguistic priming experiment showing that at lower levels of proficiency, speakers do not share syntactic information crosslinguistically, rather they represent it as language specific.

They also concluded that priming depends on the frequency of exposure to the linguistic input: Indeed, during the process of language acquisition speakers encounter an increasing number of instances of the same syntactic structure, which is subsequently connected to existing syntactic information in their L1.

In other words, according to Bernolet et al., (2013, p. 301) speakers merge combinatorial nodes between languages as an effect of increasing proficiency and thereafter, the representation systems of their L1 and their L2 become always more integrated.

Oppositely, the *Separate-Syntax Account* predicts that bilinguals do not share syntactic information between the languages that they master and that the nature of syntactic information is language specific.

In other words, the processing of one syntactic structure in a language does not directly imply the activation of the correspondent lemma in the other language and moreover, the processing of a second language is presumably not affected by speakers' L1 grammar (Hwang et al. 2018).

Hence, the extent to which bilinguals *transfer* syntactic properties from their L1 into their L2 is directly determined by speakers' proficiency: According to this account, high-proficiency speakers are less likely to transfer syntactic and grammatical information from their L1 to their L2.

The *Separate-Syntax Account* further suggests that the representation of language-specific syntactic information is susceptible to proficiency and therefore, the nature of abstract representations can change over the process of language acquisition.

Because it is typical in the research on bilingualism to investigate L2 speakers in order to answer questions with regard to i) the interaction of speakers' L1 and L2



in production and comprehension; ii) the interaction between proficiency and structural priming and iii) the extent to which priming occurs between typologically different languages (Hwang et al., 2018), it is of our particular interest to overview Hwang et al., 's (2018) study, which investigates how typologically different languages are stored and processed by bilinguals.

Their study provides evidence for the systems of language processing being integrated in bilinguals and therefore, their findings support Hartsuiker's (2004) model of shared syntax.

Interestingly, they set up two crosslinguistic priming experiments with English-Korean bilinguals, with the purpose to observe whether there was a significant difference in the magnitude of priming when the structures implied in the task were or were not equivalent between the two languages.

The first experiment considered transitive structures, such as actives and passive sentences which are similar in the Korean and English language.

31 Korean-English bilinguals (L1 Korean; L2 English) were asked to perform a picture-description priming task: They were primed with an English sentence and asked to describe a picture in Korean.

Findings showed a strong priming effect occurring in English-Korean speakers' responses and therefore, their findings providing further evidence for the existence of an integrated bilingual system (Hartsuiker, 2004).

In the second experiment, 26 Korean-English bilinguals were recruited and asked to participate in a picture norming study.

Participants were shown pictures representing i) transitive events, ii) intransitive events and iii) causative events.

All the target images were paired with one correct and one incorrect description of the event illustrated in the picture. For transitive events, the correct description was either an active or a passive sentence, whereas the incorrect description was a sentence presenting an inverted order of thematic roles. As regards intransitive events, participants were presented with one correct active sentence and one incorrect sentence implying a wrong verb.

The study was primarily focused on non-correspondent syntactic constructions between Korean and English, i.e. *causative sentences*.

In this case, participants were shown one correct description, i.e. a causative sentence, and one incorrect description, i.e. a transitive sentence.

Hwang et al. 's (2018) predictions were consistent with the *Shared-Syntax Account*: If high-proficiency participants share syntactic information between their L1 and L2, they will also produce more transfer errors by selecting an active transitive sentence to describe a causative event. Contrarily, if results were in line with the *Separate-Syntax Account*, high-proficiency speakers will be less likely to pair a transitive sentence with a causative event.

Results were consistent with Hartsuiker et al. 's (2004) model of shared syntax, as proficient participants produced a higher number of transfer errors and assigned the incorrect description to the pictures representing causative events.

Interestingly, the different word order between Korean- and English-transitive sentences did not seem to interact with priming, as both languages share the same functional relations, i.e. in both languages, the agent and the patient have the syntactic role of subject in *active* and *passive* sentences respectively (Hwang et al., 2018).

As stated above, there are three main research questions in the field of bilingualism. With the purpose to understand whether priming occurs when participants are primed with crosslinguistically different structures, the present dissertation will present a study addressed to English L2ers whose dominant language is Italian.

The structures investigated in the crosslinguistic study are alternating Italian transitive sentences, i.e. active and regular *venire*-passives (which are similar between English and Italian) and *si*-causative passives (e.g. *Il figlio si fa aiutare dal papa per la verifica*).

As this specific structure is crucial to answer the research question on which our experiment was based, it seems relevant to provide a linguistic analysis of Italian *si*-causative passives.

### 1.3. A linguistic analysis of Italian *si*-causative passives.

Italian *si*-causative passives are sentences such as:

(1) *Il figlio si fa aiutare dal papà per la verifica.*

These peculiar structures are assumed to be processed as passive sentences by Italian native speakers, forasmuch as the subject of the sentence is the patient and the recipient of the action denoted by the verb, which is performed by an agent actor, entailed in the prepositional phrase (PP).

Hence, *si*-causative passives respect the syntactic structure of *essere*- and *venire*-passives in Italian, e.g. i) *Il figlio è aiutato dal papà per la verifica* or ii) *Il figlio viene aiutato dal papà per la verifica*.

These structures have been extensively studied by Manetti and Belletti (2015), who suggested that *si*-causative passives merge the syntactic features of Italian *venire*- and *essere*-passives and of regular Italian causatives (sentences in which the verb phrase is composed by *fare* and an its complement in the infinitive form).

According to Manetti and Belletti (2015), copular (or *venire*) passives and *si*-causative passives are derived by the *Smuggling* mechanism (Collins, 2005).

According to Collins' theory (2005), the derivation of a passive sentence involves the movement of both the internal argument (the patient) and the verb phrase, in order for the internal argument to *pass* the external argument (the agent) which would otherwise block the syntactic movement, as the noun phrases entailing the agent and the patient share the same argument features (*Locality Principle*, Rizzi, 1990, 2004).

In other words, the derivation of a passive sentence implies two stages: i) the movement of one entire chunk of the sentence (VP+ internal argument) in VoiceP, i.e. before the external argument and ii) a further movement of the internal argument in sentence-head position.

The syntactic movement with respect to sentence (a) would be as follows:

a. *Il figlio viene aiutato dal papà per la verifica.*

The son is helped by his father for the test.

The first syntactic movement concerns a chunk of the sentence entailing the verb phrase (VP) and the internal argument (NP): [*aiutare*<sub>VP</sub> *il figlio*<sub>NP</sub>]:

[VoiceP<*aiutare il figlio*>] [*il papà* *aiutare il figlio*] *per la verifica*

The chunk [VP+NP] moves in Voice P and thereafter, the internal argument moves in sentence-head position (TP) leaving a trace of its syntactic movement.

Finally, the auxiliary verb is added to the sentence, which in Italian can be *venire* or *essere*. (Volpato & Bozzolan, 2017, p.361).

[<sub>TP</sub>*Il figlio viene* [<sub>VoiceP</sub><*aiutato il figlio*>] *dal* [*papà* *aiutato il figlio* *per la verifica*]]

The analysis provided above also applies to Italian *si*-causative passives, made exception for the auxiliary verb which is *fare* and is preceded by the reflexive pronoun *si*.

Thus, the syntactic movement of a sentence such as: *Il figlio si fa aiutare dal papà per la verifica*, would be as follows:

i) The chunk [VP+internal argument] moves in VoiceP (Collins, 2005):

[VoiceP<*aiutare il figlio*>] [*il papà* *aiutare il figlio*] *per la verifica*

- ii) The internal argument reaches the sentence head position;
- iii) The auxiliary verb *fare* is attached to the VP and preceded by the reflexive pronoun *si*;
- iv) The external argument becomes a prepositional phrase (the agent):

[<sub>TP</sub>*Il figlio si fa* [<sub>VoiceP</sub><*aiutare il figlio*>] *dal* [*papà* *aiutare il figlio* *per la verifica*]]

In order to demonstrate the hypothesis of *si*-causative passives being interpreted as passive sentences, Belletti and Manetti (2015) conducted a priming experiment including a picture-description task, with the purpose to investigate the processing and production of passives in children aged 41-54 months.

Their results showed a stronger effect of priming following *si*-causative sentences, as the proportions of passive sentences produced after this prime condition increased by +8%.

They furthermore observed a remarkable number of *si*-causative passive sentences being produced after passive primes with the auxiliary *venire* and *essere*.

Interestingly, Manetti and Belletti (2015) speculated that *si*-causative sentences may be developed earlier, with respect to regular passives.

Hence, assuming the underlying syntactic movement of *si*-causative passives is driven by the same mechanism which is involved in the derivation of copular and *venire* passive sentences (*Smuggling*, Collins, 2005) and considering that the order of constituents in the sentence corresponds to the order of both Italian and English copular passives, it might be predicted that *si*-causative passives should prime passive sentences in English, if high-proficiency participants shared the syntactic information between the two languages.

This prediction does not account for the semantic constraints entailed in *si*-causative passives, as this hypothesis is based on the assumption that priming is syntactically driven.

On the contrary, if Italian-English bilinguals did not share syntactic information between their L1 and L2, then no prime effect should be observed after the exposure to crosslinguistically different passives (*si*-causative passive sentences in Italian).

## 1.4. Second Language Acquisition

*“We have and acquire knowledge,  
rather than knowing and learning knowledge.  
Learning is one method whereby we acquire knowledge”  
(Valian, 1981, p.323)*

The research on language acquisition has mainly been focused on how speakers acquire language and on the mechanisms which are involved in the process of language acquisition.

First-language acquisition is not a conscious and controlled process. On the contrary, it depends on the exposure to a specific linguistic environment, which allows children to receive the linguistic input from the very beginning of their lives.

Starting from the second to the sixth months after birth, children start producing the first vocal sounds (e.g. they cry) and following this first phase, they start developing language-specific sounds.

Within the first year of life, children develop the ability to gesticulate and eventually, they start pronouncing the first words. During this stage, it is interesting to observe how children perceive the surrounding reality, as these perceptions actually allow them to start inferring about language.

The continuous contact with adult-speech and the experienced environment furthermore allows children to develop their vocabulary and mental grammar, which has been demonstrated to be abstractly represented in children since the earliest stages of language acquisition (Bencini & Valian, 2008).

Commonly, the development of grammar knowledge continues until the 9th or 10th year of life.

On the other hand, the process of acquiring a second language (SLA) is radically different and this is primarily because second-language learners do not receive the same kind of linguistic input, in the same linguistic environment, at the same age and with the same frequency of exposure as L1 acquirers.

Slabakova (2009), reporting Bley-Vroman's theory (1990), suggested that there are at least *ten* differences between L1 and L2 acquisition.

First of all, the possibility of success in first- and second language acquisition is different, since all human beings do acquire and therefore master – at least – one first language, whereas the process of SLA is not always successful, depending on the approaches and methods adopted in the learning process.

According to Bley-Vroman's approach (1990), i) the lack of success and ii) a more general failure in the process of SLA may be the consequence of iii) a variation in the strategies adopted and more essentially, iv) in speakers' goals. In addition, Bley-Vroman (1990) stated that a central role in SLA is definitely played by the correlation between learners' v) age and proficiency. Furthermore, one phenomenon which does not occur in L1 acquisition is the vi) fossilization in the process of acquisition, as speakers commonly acquire language within a natural environment they are not influenced by any prior linguistic knowledge.

On the contrary, when speakers start acquiring a L2, they have already access to their UG and this allows them to have vii) indeterminate intuitions about grammar and moreover, they are more likely to transfer the syntactic properties of their L1 (Bley-Vromann, 1990).

Finally, it must be underlined that SLA mostly occurs through controlled teaching and learning methods, which are analytic and controlled processes and therefore, viii) a well-planned teaching and learning process is crucially important as it allows L2ers to monitor their errors deflecting their attention from ix) negative evidences.

To conclude, crucially determining factors which must be taken into account in the process of second language acquisition are x) affective factors. (Slabakova, 2009, pp. 155-156).

As stated above, the process of acquiring a L2 does generate a change in speakers' mental states (Valian, 1981) and is therefore likely to influence L2ers' linguistic representations.

Not only is it a matter of *how much* it is known about a L2, but also of *the manner* in which knowledge is represented.

Bialystok (1981) suggested that a qualitative research on second language acquisition must be focused on i) the type of mental representations and on ii) how people access syntactic information.

According to White (2003), the role of the UG also differs when speakers process their first or second language, as UG is a “genetic blueprint” which allows the availability of specific grammar properties that are not usually implicitly or explicitly taught.

In other words, children do know what is *grammatical* in their language and therefore recognize ungrammatical utterances, as they are able to relate previous linguistic experiences to new contexts of use: This implicit knowledge is driven by the Universal Grammar (White, 2003, p.2).

Furthermore, the UG allows speakers to set linguistic *parameters* (White, 2003, p. 9) which play a key role in SLA.

Two crucial and still-open questions in the research on Second Language Acquisition are whether i) learners do *set* or rather, *reset* their UG parameters in the process of SLA and ii) the modality of accessing linguistic information. In other words, the question is whether they *fully* or *partially* access the UG (White, 2003, p. 16).

In order to shed light on these aspects, in 1994 Schwartz and Sprouse suggested the *Full Transfer/Full Access Theory*, according to which the initial state of L2 acquisition corresponds to the final state of L1 acquisition.

Hence, the starting point of L2 acquisition is radically diverse from the initial state of L1 acquisition as it provokes a change of learners’ mental states. In other words, the initial state of L2 acquisition is featured by a later exposure to the L2 syntax, which starts from a target language (TL) and changes in light of the TL input (White, 2003) and for this reason, it may be stated that L2ers’ language, which according to White (2003) has the features of an *interlanguage*, is constrained by the same principles that determine L1 acquisition and is additionally driven by a rule-governed behavior which can be investigated by the analysis of L2 speakers’ errors in production.

Likely, second language learners do not produce random errors rather, these errors do shed light on the nature of SLA, as they are typically *transfer errors* (White, 2003).



Namely, second language speakers produce errors as they *transfer* their linguistic competence and grammatical knowledge from their first language into their second language.

This phenomenon does also allow to make some hypotheses on how speakers represent syntactic information with regard to their L1 and L2, i.e. whether their nature is language-specific (*Separate-Syntax Account*) or they are shared between languages (*Shared-Syntax Account*).

Chang and Bock (2006) claimed that second language learners eventually “become syntactic” as a result of an improved i) ability to map the meaning of a lemma and ii) a furthered competence in the production of utterances which are conform to the syntax of the target language.

Hence, proficiency does allow a change in speakers’ competence and in the nature of syntactic representation, as demonstrated by previously presented studies on syntactic priming. In other words, speakers are assumed to develop shared syntactic information between their L1 and L2, as they become proficient in their L2.

Hartsuiker and Bernolet (2015) focused on the development of a shared-syntax representation in SLA, suggesting a model of syntactic acquisition.

According to their account (2015), there are two different stages in the process of learning a second language. In line with the *FT/FA theory* (Schwartz and Spourse, 1994), Hartsuiker and Bernolet suggested that the very first stage of second language acquisition is, to a degree, a *transfer-stage*: That is, speakers rely on their L1 syntactic knowledge and tend to imitate the input received from the surrounding environment. As proficiency increases, language-specific and item-specific syntactic representations are added to this network and speakers eventually start representing them abstractly and sharing syntactic information between languages.

In other words, at the earliest stages of SLA speakers do not represent the L2 syntax abstractly, rather they transfer information from their L1, or they copy and adjust sentences that they had previously heard. As an effect of developing competence, L2ers start storing language- and item-specific representations, which they will eventually share between languages, as they become more proficient (Hartsuiker & Bernolet, 2015).

If Hartsuiker and Bernolet's model (2015) was to be applied to the current study, high-proficiency speakers would be predicted to share syntactic information between languages independently of the nature of the syntactic structures to which they are exposed, i.e. either crosslinguistically similar or different structures.

If this was the case, it would be plausible to hypothesize that the nature of language representations changes over time, since it becomes more abstract and therefore shared between languages.

In 2018, Bernolet and Hartsuiker investigated the learning trajectory that allows speakers to share syntax between languages by analyzing different syntactic priming studies and taking into account corpora of L2ers' errors.

Importantly, they demonstrated that not only does proficiency influence the manner in which second language speakers produce language, but also the frequency and nature of exposure to the linguistic input play a crucial role in the acquisition of a second language (Bernolet & Hartsuiker, 2018).

Similarly, Hopp et al. (2019) investigated the syntactic development in German L2ers of English by using a picture-based interpretation task. They considered *wh*-questions and relative clause constructions with the purpose to answer the following research questions:

- i) *"How does L1 transfer affect early syntactic FL development of wh-questions and relative clauses?"* (Hopp et al, 2019, p. 1249);
- ii) *"How does input quantity affect early syntactic FL development?"* (Hopp et al, 2019, p. 1249).

German and English are syntactically different with regard to the order of constituents within the sentences.

By means of a picture-based interpretation task, Hopp et al. (2019) aimed at a deeper understanding of how German-English bilinguals interpret *wh*-questions and relative clauses in English with the purpose to ascertain whether the production and comprehension of these structures were somehow influenced by the parameters and syntactic properties of speakers' L1 (German).

Importantly, they considered different populations of speakers, i.e. i) early and ii) late FL acquirers, and iii) child FL and iv) L2 acquirers.

Interestingly, Hopp et al. (2019) findings showed no evidence of L1 transfer in the interpretation of *wh*-questions and relative clauses constructions with regard to early FL learners.

Differently, adult FL learners did show transfer effects in comprehension and crucially, this result was shown not to be dependent on the frequency of exposure to the L2 linguistic input.

Presumably, the age of L2 acquisition significantly interacts with the process of acquiring a second language and therefore predicts its success.

To conclude, it is important to bear in mind that the population of L2 learners is extremely variegated and that individual differences among bilinguals may depend on i) the age of L2 acquisition ii) the amount of exposure to the linguistic input iii) the learning context and iv) the type of linguistic input received, hence it also depends on whether L2 acquisition occurs in a formal and analytic teaching-and learning-context or rather, as a result of a full immersion in the L2 environment.

## CHAPTER TWO

### *Norming and Pilot phase*

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#### **Introduction**

The study presented in this dissertation aims to investigate Italian-English bilinguals' mental representation as regards crosslinguistically different structures between the languages that they master, with the purpose to ascertain to what extent L2 English speakers share syntactic information between languages.

Our study was specifically addressed to Italian L2 learners of English with intermediate- (B1 and B2) and high levels (C1 and C2) of proficiency, a variable which has been proved to modulate the magnitude of priming effect (e.g. see Bernolet and Hartsuiker, 2013, Hartsuiker and Bernolet, 2017 and Favier et al., 2019) and the extent to which combinatorial nodes *are* or *are not* shared across languages in bilinguals' brains.

We used a crosslinguistic priming paradigm: Participants were presented with active, *venire*-passive and *si*-causative passive primes and then, they were asked to describe 24 target pictures with a given verb which was presented underneath the picture, in order to elicit the production of a transitive sentence.

The experiment was divided into three phases: i) the *norming* phase; ii) the *pilot* phase and iii) the crosslinguistic priming experiment.

In the present chapter, we present the two preliminary phases of the study, i.e. the *norming* and *pilot* phases.

#### **2.1. Item norming**

The *norming* phase allowed us to assess whether or not our experimental items were accepted in the *si*-causative condition.

In fact, *si*-causative passives are not frequent in natural speech and moreover, they predominantly occur in specific, semantically-constrained circumstances, i.e. the patient of the verb is usually animate (and in most cases, human), since this

peculiar structure implies the willingness of the patient to receive a certain action by the agent.

For these reasons, we recruited 14 Italian native speakers who were asked to rate the 24 *si*-causative prime items (which only presented human, animate actors) on a 1-to-7 Likert scale.

### **2.1.1. Method**

14 Italian native speakers were recruited through personal contacts and were asked to rate 24 *si*-causative prime sentences, in order to ascertain whether this peculiar construction was correctly interpreted by native speakers and moreover, to ensure that they were accepted as plausible and non-marked utterances in Italian.

All items were rated on a 1-to-7 Likert scale, with 1 being “*non-acceptable in Italian*” and 7 being “*perfectly acceptable in Italian*”. Norming-participants were not asked to complete any language profile questionnaire or to provide personal data.

The norming survey was designed using the platform Qualtrics and administered to participants remotely. They were sent an e-mail with a link to the platform which automatically redirected them to the online platform. Before the survey, participants were asked to read and accept a consent form which was modulated for this phase.

Moreover, we found it essential to provide them with a short explanation of what “*acceptable*” means in linguistics terms and therefore, to instruct them on how to score our experimental items. The instruction screen displayed the following text:

“Per questa prima fase dello studio, verrà chiesto ai partecipanti di valutare l'accettabilità di 24 frasi italiane con *si*-causativo.

ISTRUZIONI: Per ognuna delle frasi proposte nel questionario, attribuisce un punteggio da 1 (non accettabile in italiano) a 7 (perfettamente accettabile in italiano).

Per giudicare queste frasi, non è necessario concentrarsi sulla loro correttezza grammaticale bensì sulla probabilità che tu possa dirle in determinate circostanze.

Dunque, il giudizio deve essere dato sulla base della tua interpretazione personale della frase in qualità di parlante nativo.

RICORDA: Nel giudicare la frase, concentrati solo su questi aspetti: i) la frase è comprensibile anche se estrapolata dal contesto, ii) il significato è chiaro, iii) la direi in determinate circostanze.

NOTE:\*Accettabile: la frase è ben formulata, non noti alcuna difficoltà nel comprenderne il significato ed è comprensibile anche estrapolata dal contesto”.

Essentially, participants were asked to rate each sentence according to its understandability beyond a specific pragmatic context, to the clarity of the message conveyed by the utterance and to the probability to produce this type of sentence in specific circumstances.

The questionnaire was composed of 24 questions, according to the number of experimental items administered in the crosslinguistic experiment.

### **2.1.2. Results**

The table presented below (Table 1) illustrates the mean scores, the minimum and maximum scores and the standard deviation values by items.

The data analysis was conducted on Qualtrics, as this platform allows to automatically analyze the questionnaire reports and it furthermore assigns mean, minimum, maximum and standard deviation scores to each survey questions. We therefore report the score obtained for each one of our *si*-causative item and on this basis, some changes were made to the experimental material.

We primarily wanted to ensure that Italian native speakers would have fully accepted, comprehended and correctly interpreted our experimental items in the critical condition, as the task did not allow us to present sentences within a specifically related pragmatic context and furthermore, the semantic constraints entailed in *si*-causative passives might have interfered with a full comprehension of the prime sentences during the task.

**Table 1.** Acceptability rates of *si*-causative sentences by 14 Italian native speakers. Mean, minimum and maximum score and standard deviation by item.

<b>Acceptability rates of <i>si</i>-causative passives</b>				
<b>1: Non-acceptable in Italian</b>				
<b>7: Perfectly acceptable in Italian</b>				
<i>Items</i>	<i>Mean</i>	<i>Min.</i>	<i>Max.</i>	<i>SD</i>
<b>Item 1</b>				
<i>Il bambino si fa lavare dalla tata nella vasca</i>	5.00	2	7	1.41
<b>Item 2</b>				
<i>Il figlio si fa aiutare dal papà per la verifica</i>	5.86	1	7	1.60
<b>Item 3</b>				
<i>L'alunno si fa rimproverare dalla maestra di continuo</i>	5.29	2	7	1.62
<b>Item 4</b>				
<i>Gli ospiti si fanno registrare dalla receptionist nella hall</i>	5.71	1	7	1.75
<b>Item 5</b>				
<i>L'attrice si fa truccare dall'estetista per l'esibizione</i>	6.07	3	7	1.33
<b>Item 6</b>				
<i>La figlia si fa baciare dal papà sulla fronte</i>	5.14	2	7	1.55

**Item 7**

*La ballerina si fa cambiare dall'aiutante durante il saggio* 5.50 2 7 1.55

**Item 8**

*Il figlio si fa portare a scuola dalla mamma* 6.14 4 7 0.99

**Item 9**

*La cliente si fa depilare dall'estetista con il laser* 5.79 3 7 1.32

**Item 10**

*La paziente si fa contattare dalla psicologa in privato* 4.93 2 7 1.83

**Item 11**

*Il figlio si fa inseguire dal papà in giardino* 5.21 3 7 1.21

**Item 12**

*I viaggiatori si fanno accompagnare dal taxista in aeroporto* 6.00 4 7 1.07

**Item 13**

*Il nipotino si fa coccolare dalla nonna sulla poltrona* 5.93 3 7 1.33

**Item 14**

*La nipotina si fa abbracciare dal nonno con affetto* 5.57 3 7 1.64

**Item 15**

*Il paziente si fa curare dal dottore con un nuovo farmaco* 5.71 2 7 1.33

**Item 16**

*La modella si fa vestire dallo stilista per la sfilata* 5.64 4 7 1.17



<b>Item 17</b>				
<i>Il nipote si fa ospitare dalla zia per l'estate</i>	6.29	4	7	0.96
<b>Item 18</b>				
<i>L'atleta si fa allenare dal personal trainer per la gara</i>	5.43	1	7	1.80
<b>Item 19</b>				
<i>Lo sposo si fa pettinare dal parrucchiere per il matrimonio</i>	5.93	3	7	1.49
<b>Item 20</b>				
<i>Il ferito si fa medicare dall'infermiera con delle garze</i>	5.71	2	7	1.58
<b>Item 21</b>				
<i>Gli studenti si fanno convincere dall'insegnante con un premio</i>	4.64	1	7	2.06
<b>Item 22</b>				
<i>La sorellina si fa accarezzare dal fratello sulla guancia</i>	5.50	2	7	1.50
<b>Item 23</b>				
<i>Il bambino si fa cercare dalla mamma per tutta la casa</i>	5.07	2	7	1.79
<b>Item 24</b>				
<i>Il cliente si fa tatuare dall'artista sulla schiena</i>	5.71	4	7	1.10

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On average, the mean score assigned to the 24 *si*-causative items was 5.37, hence it seems plausible to conclude that Italian native speakers accept, comprehend and would produce this peculiar syntactic structure in specific pragmatic contexts.

Interestingly, all items received, at least by one participant, both the maximum and the minimum scores. Some items were rated with a low mean score,

if compared with other experimental prime sentences. Thus, some changes were made with regard to the actors and the prepositional phrases of the low-rated sentences.

Item 10, which was originally presented as: “*La paziente si fa contattare dalla psicologa in privato*” and received a low mean score (4.93) was changed into: “*La paziente si fa contattare dalla psicologa per la visita*”.

For the same reason, item 21, i.e. “*Gli studenti si fanno convincere dall’insegnante con un premio*”, which got a mean score of 4.64, was changed into: “*Gli studenti si fanno convincere dall’insegnante a partecipare*”.

In order to keep all the experimental items as equal and balanced as possible and with the purpose to avoid any gender stereotypes, other items were modified.

For instance, i) the patient presented in item 5 was changed into *l’attore* instead of the female NP *attrice*; ii) some PPs were changed with regard to their length, as for instance the preposition “*durante*” was modified into “*per*”.

On average, results suggested that *si*-causative passives are accepted by Italian mother-tongue speakers and that they are plausible in specific, pragmatic circumstances, independently of the infrequency of this specific syntactic structure in natural speech.

## **2.2. Pilot phase**

The pilot phase primarily served to ensure that the experiment was running correctly on Pavlovia.org and that there was no technological malfunctioning.

We recruited 6 Italian-English bilinguals and by the analysis of their results, it was possible to understand whether the instructions of the task were straightforward and unambiguous.

This phase was essential, as the current circumstances did not allow us to run the experiment in presence and therefore, to solve possible complications.

## 2.2.1. Method

### 2.2.1.1. Participants

6 participants (3 men and 3 female,  $M_{age}$ : 25) took part in the pilot phase. As subjects were recruited through personal contacts, we were informed of their levels of education and linguistic backgrounds and for this reason, it was possible to formulate some hypotheses by the analysis of their results.

Participant 1 (P1) was a 21-year-old BA student who had been attending University in Milan and rated their English-proficiency level as a CEFR B1-B2. Participant 1 informed us to have studied English for about 10 years, starting from primary school.

Participant 2 (P2) was a 22-year-old Russian native speaker. At the time of the experiment, this participant was living in Italy.

P2 mastered English at a CEFR-C2 level and was fluent both in comprehension and production. The profile background of this participant was peculiarly interesting: P2 also mastered Latvian at a C2, close-to-native level and Italian at a B1-B2 level.

Participant 3 was a 25-year-old MA student who was enrolled in the Math Program, at the University of Milan. At the time of the experiment, this participant had just spent over 5 months in Spain, as an Erasmus student. They informed us to have been mostly speaking English during the program and to have started studying English in primary school.

Participant 4 (P4) was a 29-year-old architect who graduated in Milan in 2017 with a MA degree in Architecture. P4 reported to have mastered English at an intermediate level and not to have used or been exposed to the language very frequently.

Participant 5 (P5) was a 30-year-old BA graduate who informed us to be seldom in contact with the English language and not to use it on a weekly basis. Rather, their contact with English was limited to the use of Social Media.

Participant 6 was a 25-year-old BA graduate who started learning English during primary school and had attended a language high school which was focused on English, French and German language and literature. P6 reported to have an intermediate proficiency in English (B1/B2 level).

### 2.2.1.2. Materials and Procedure

All participants were sent an instruction email with a URL link to the pilot-experiment, which was constructed on Psycho.py and run remotely via Pavlovia.org.

The material was composed of 72 fillers and 24 experimental prime sentences in three conditions, i.e. active, *venire*-passive and *si*-causative passive sentences. All the items (1 filler, 3 prime sentences and 1 target image + verb) were randomly assigned to three lists and we therefore created three different versions of the pilot experiment.

As mentioned above, the main purpose of the pilot phase was to ensure that there were no i) linguistic mistakes in the sentences (i.e. grammar-, syntactic- or semantic errors); ii) difficulties in interpreting the target pictures and the instructions of the task or iii) technological malfunctioning with Pavlovia.org.

The pilot procedure was identical to the experimental procedure (see chapter 3), made exception for the language profile questionnaire which was not administered during this phase.

All participants performed and successfully completed the picture-description task which consisted of three routines repeated for 24 times and lasted about 20 minutes.

### 2.2.1.3. Scoring

Participants' responses were scored both according to a *strict*- and a *lax scheme* of coding criteria, which we present in chapter 3.

In a nutshell, according to the *strict scheme* of coding criteria, only sentences which included both the agent and the patient (NP or pronouns), the target VP and, in the case of passive sentences, the agent within a *by*-prepositional phrase were scored as *strict actives* and *strict passives* respectively.

Hence, regarding the strict scheme of coding criteria, sentences were scored as:

a. *Strict active:*

NP or Pr (agent) + VP (target verb) + NP or Pr (patient);

e.g. *The boy kisses the girl.*

b. *Strict passive:*

NP or Pr (patient) + VP (target verb) + by-PP (agent)

e.g. *The king is dressed by the servant.*

All the sentences which did not present the above-mentioned syntactic structures were scored as *strict others*.

This category included active sentences which only presented the agent actor and the target VP and did not contain the patient, rather a body part of the human actor depicted in the picture. Nonetheless, these sentences were considered as *lax actives* according to the *lax scheme* of coding criteria.

In addition, *strict other* sentences also included utterances with an ungrammatical PP, such as:

3) *\*The slave is kissed to the queen;*

4) *\*The girl is waked up to the man;*

5) *\*The man is stopped to security;*

6) *\*The children is hitted the mum.*

As regards sentences 3 - 5, participants produced a *to*-PP instead of a *by*-PP, which is grammatical in English, whereas sentence 6 did not include any PP.

However, we decided to score these sentences as *lax passives*, as the order of thematic roles presented in these four responses did respect the grammatical order of passive structures in English and in addition, the NPs in agent- and patient roles were in line with the roles of the actors presented in the target images.

In the following section, we present and discuss the results of the pilot phase, both accounting for the entire sample and for each one of the *pilot*-participants, made exception for participant 1 and 2, who were excluded from the data analysis.

### 2.2.2. Results

Overall, participants successfully performed the task and interpreted the target images correctly, made exception for one participant (P1) who did not follow the instructions and translated all filler and prime sentences into English, instead of copying them in Italian.

Although P1's results were not included in the data analysis, they helped improve the experiment with regard to the instruction screen.

In addition, P2 was also excluded from the analysis, as their dominant language was not Italian. In fact, P2 did not show any priming effect in their responses, although the task was completed accurately. Presumably, the lack of priming effect was due to P2's level of proficiency in Italian.

Nonetheless, it was interesting to observe the results of a non-native speaker who had been exposed to a L3 prime and asked to produce a target sentence in their L2, as it sheds light on the magnitude of priming and its constraints, with reference to speakers' proficiency in mastering the language.

The tables presented below illustrate the mean proportions of active, passive and other responses by condition, both with reference to the *strict scheme* (table 2) and the *lax scheme* of coding criteria (table 3).

**Table 2.** Total number, proportions and standard deviation of strict actives, strict passives and strict others by priming condition

<i>Condition</i>	<i>Strict Active</i>		<i>Strict Passive</i>		<i>Strict Other</i>	
	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>
Active	25	.80 (0.40)	3	.09 (0.30)	3	.09 (0.30)
<i>Venire</i> -passive	22	.66 (0.47)	9	.27 (0.45)	2	.03 (0.17)
<i>Si-causative</i> -passive	21	.65 (0.48)	9	.28 (0.45)	1	.06 (0.24)

The table above illustrates the total numbers and mean proportions of *strict active*, *strict passive* and *other* sentences by priming condition.

Interestingly, the proportion of strict passives considerably increased after prior exposure to regular *venire*-passives (+18%) and *si-causative* passives (+19%) and therefore, these numbers suggest that the magnitude of priming was significant and that both crosslinguistically similar and different structures are integrated and shared between participants' L1 and L2.

**Table 3.** Total number, mean proportion and standard deviation of lax actives, lax passives and lax others by priming condition.

<i>Condition</i>	<i>Lax Active</i>		<i>Lax Passive</i>		<i>Lax Other</i>	
	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>
Active	26	.83 (0.37)	5	.16 (0.37)	-	-
<i>Venire</i> -passive	23	.69 (0.46)	9	.27 (0.45)	-	-
<i>Si-causative</i> -passive	21	.65 (0.48)	11	.34 (0.48)	-	-

As can be seen from table 3, the proportion of passive sentences produced after *venire*-passive primes increased by 11%, if compared to the proportion of passive sentences produced after prior exposure to an active prime.

Moreover, participants produced 34% of English passives after having been presented with an Italian *si-causative* prime, suggesting that the magnitude of priming does not vary when the structures do not correspond between languages (+18%).

Taken together, our findings show an encouraging priming effect and we can thus conceivably assume that our results are consistent with the *Shared-Syntax Account* (Hartsuiker et al., 2004) and that Italian-English bilinguals can be primed with both crosslinguistically similar- and different structures.

We acknowledge that the sample size does not allow us to draw any conclusions.

However, we decided to conduct this analysis in order to have a preliminary idea of the strength of priming in Italian-English bilinguals.

Overall, participants showed encouraging results for two reasons: First, all the sections were successfully completed and more importantly, the strong priming effect observed with *pilot*-participants allowed us to maintain the experimental conditions and the target images in the experimental phase.

Because the size of the pilot-sample was small, we decided to further our analysis and calculate the proportions of English passives by prime condition for each one of our participants, made exception for participant 1 and 2.

The logic behind this decision was to have a preliminary idea of the extent to which proficiency interacted with priming: This helped us define the criteria for the sample recruitment.

It must be pointed out that although *pilot*-participants did not complete a language profile questionnaire, it was possible to assess their level of proficiency as they were recruited through personal contacts and were informally asked to evaluate their competence in English according to i) how frequently they were exposed to the language and with regard to their ii) background education (type of schools and years of English classes). For the following analyses, only *lax* coding criteria were considered.

**Table 4.** *P3's total number, proportions and standard deviation of lax actives, lax passives and lax others by priming condition*

<i>Condition</i>	<i>Lax Active</i>		<i>Lax Passive</i>		<i>Lax Other</i>	
	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>
Active	6	.85 (0.37)	1	.14 (0.37)	-	-
<i>Venire</i> -passive	4	.44 (0.52)	5	.55 (0.52)	-	-
<i>Si-causative</i> -passive	3	.37 (0.51)	5	.62 (0.51)	-	-



As table 4 illustrates, participant 3 did show a strong priming effect, considering that the proportion of passive sentences produced after both *venire*- and *si-causative*-passive primes increased by 39% and 48% respectively, if compared to the proportion of passives produced after *active* primes.

These results are consistent with Hartsuiker et al.'s (2004) *Shared-Syntax Account*, according to which high-proficiency participants share syntactic information between languages.

Presumably, a conspicuous number of months spent in contact with the L2 during the Erasmus program helped this participant increasing their proficiency in English.

**Table 5.** *P4's total number, proportions and standard deviation of lax actives, lax passives and lax others by priming condition*

<i>Condition</i>	<i>Lax Active</i>		<i>Lax Passive</i>		<i>Lax Other</i>	
	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>
Active	6	.75 (0.46)	2	.25 (0.46)	-	-
<i>Venire</i> -passive	8	.100	-	-	-	-
<i>Si-causative</i> -passive	6	.75 (0.46)	2	.25 (0.46)	-	-

Interestingly, participant 4's results suggest that priming only occurred after a prior exposure to *si-causative* passive primes. On the contrary, only active sentences were produced after *venire*-passive primes.

Drawing conclusions or making hypotheses would probably be presumptuous. However, it must be pointed out that participant 4 informed us not to be frequently exposed to the English language and to master it at a low-intermediate level (A2/B1). It is plausible to assume that these results provide evidence for proficiency interacting with priming.

**Table 6.** P5's total number, proportions and standard deviation of lax actives, lax passives and lax others by priming condition

<i>Condition</i>	<i>Lax Active</i>		<i>Lax Passive</i>		<i>Lax Other</i>	
	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>
Active	7	.88 (0.35)	1	.12 (0.35)	-	-
<i>Venire</i> -passive	7	.88 (0.35)	1	.12 (0.35)	-	-
<i>Si-causative</i> -passive	7	.88 (0.35)	-	-	-	-

Likewise, participant 5's results did not show a significant priming effect, considering that no passive sentence was produced after *venire*-passive primes and only 12% of passive responses occurred after a prior exposure to *si-causative* primes.

Participant 5 stated to be seldom exposed to the English input with the exception of online games and social networks and to master it at low-level of proficiency.

Conceivably, we consider it as a further evidence of a correlation between priming effect and bilinguals' proficiency: Low-proficiency speakers activate language-specific combinatorial nodes when exposed to a L1 or L2 input and therefore, they do not share the representation of syntactic information between languages.

**Table 7.** P6's total number, proportions and standard deviation of lax actives, lax passives and lax others by priming condition

<i>Condition</i>	<i>Lax Active</i>		<i>Lax Passive</i>		<i>Lax Other</i>	
	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>
Active	7	.87 (0.35)	1	.12 (0.35)	-	-
<i>Venire</i> -passive	4	.50 (0.53)	4	.50 (0.53)	-	-
<i>Si-causative</i> -passive	5	.63 (0.51)	3	.37 (0.51)	-	-

Participant 6's results showed a significantly strong priming effect, as illustrated in the table above (table 7). The proportion of passive sentences produced after prior exposure to *venire*-passive primes considerably increased with respect to the proportion of passive sentences following active primes.

Likewise, crosslinguistically different structures seemed to prime passives in English at a high degree, as 37% of passives were produced after *si*-causative primes.

Participant 6's result may depend on different variables, such as a recent full-exposure to the English language in a natural context and their high level of proficiency.

As stated above, it is not possible to draw assertive conclusions, as the sample tested during the *pilot*-experiment was too small.

However, taken together our results suggest that the structures investigated in the current study do elicit the production of English passives, both with regard to similar and different syntactic structures between participants' L1 and 2.

### 2.3. Discussion

In this chapter, the methods and results of the norming and pilot phases were presented.

During the norming phase, 14 Italian native speakers were asked to rate 24 *si*-causative sentences on a 1-to-7 Likert scale, in order to assess the extent to which Italian native speakers accept *si*-causative passives when not related to a specific pragmatic context .

Overall, participants accepted *si*-causative passives (mean score: 5.37) as plausible and grammatical in Italian.

Our sentences specifically presented animate, human actors, as this peculiar syntactic structure implies the willingness of the patient to receive the action expressed by the VP.

According to the mean score assigned to each item, some changes have been made to the experimental material with the purpose to i) avoid stereotypical differences; ii) maintain gender-equality with reference to the number of male- and female-NPs across sentences and iii) keep all the experimental items as balanced as possible in terms of sentence-length.

6 Italian native speakers participants were recruited for the pilot phase and were sent a link to the experiment, which had to be run online in Pavlovia.org.

This phase served primarily to assess whether the task of the experiment was unambiguous and to verify that there were no technological complication, as the experiment had to be run remotely due to the current circumstances.

In addition, it was important to analyze participants' responses for two main reasons: First of all, the analysis helped us understand whether the 24 target pictures presented in the trial were well-drawn and clear, with respect to the actors and the action depicted in the images.

Secondly, it was possible to observe whether priming occurred between crosslinguistically similar- and different structures and this therefore allowed us to ascertain the extent to which priming and proficiency interact.

Overall, the descriptions produced by *pilot*-participants did match the target description of the pictures, independently of the correctness of English grammar and syntax.

For this reason, we conceivably concluded that there was no difficulty in comprehending the actions depicted in our images and we therefore decided to use them for the priming experiment.

Two *pilot*-participants were excluded from the analysis of data: i) P1, who did not complete the task correctly, as fillers and primes were translated into English instead of being copied in Italian and ii) P2, whose mother-tongue language was not Italian.

P1's results were nonetheless helpful as they allowed us to improve the instruction screen and avoid additional misinterpretations in the experiment.

Hence, a recorded-voice which presented instructions was added to the instruction screens at the beginning of the experiment. Moreover, we added a further example screen: Participants were first presented with two pictures representing the trial and then asked to practice it before starting the experiment.

In the following chapter we present the method of our crosslinguistic priming experiment and we discuss our results.

## CHAPTER THREE

### *Crosslinguistic Priming Experiment*

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*To what extent  
do Italian si-causative passives  
prime English passives in production?*

#### **Introduction**

A large body of the literature employs priming as an experimental paradigm for the investigation of language processing in bilinguals, both with regard to comprehension and production (see Chapter 1).

Specifically, the priming effect can be described as the tendency of speakers to repeat a syntactic structure to which they were previously exposed.

Typically, priming experiments entail alternating syntactic structures, e.g. *active* and *passive* transitive sentences or, dative sentences in *double-object* or *prepositional-object* condition, with the purpose to observe whether the exposure to one or the other structure can enhance its repetition in production.

Priming has been demonstrated to occur with the same magnitude both within- and between languages. With regard to crosslinguistic priming experiments, participants are typically exposed to an input in one language and asked to produce a target sentence in a different language: Thus, it can occur both in a L1-L2 direction or a L2-L1 direction.

The main purpose of this empirical research is to understand how bilinguals represent syntactic information between-languages, i.e. whether combinatorial nodes are language-specific or shared between speakers' L1 and L2.

Hartsuiker et al. (2004) developed a model of shared syntax, according to which syntactic information is stored and processed as language-specific at the earliest stages of language acquisition and as an effect of increasing proficiency, the mechanism which allow language processing become always more integrated across languages.

Thus, according to a growing body of literature (see Chapter 1), *proficiency* is a variable which may modulate and therefore predict the magnitude of priming effect in bilinguals.

In 2019, Hwang et al. demonstrated that not only do bilinguals share syntactic information when the structures are similar between their L1 and L2, but also when the two languages are crosslinguistically different.

In the same vein, the present study aims to answer the following research question:

- i) If at higher levels of proficiency bilinguals share the abstract representations of crosslinguistically similar constructions between their L1 and L2, how would they represent structures which do not correspond between languages?
- ii) Specifically, to what extent do Italian *si*-causative passives prime English passives in production?

We investigate syntactic structures such as Italian regular *venire*-passive sentences and Italian *si*-causative passives, which present no direct translation in English.

We predict that Italian-English proficient bilinguals will show a priming effect after prior exposure to *venire*- and *si-causative*-passives in Italian and therefore, that more English passives will be produced as an effect of the processing of a passive structure in Italian, regardless of its correspondence between the two languages.

### **3.1 Method**

#### *3.1.1 Participants*

35 participants (12 male, 23 female,  $M_{age}$ : 27;8) took part in the crosslinguistic priming experiment. Participants were recruited through personal contacts and social media (Facebook and Instagram) and they voluntarily participated in the study as native speakers of Italian and L2 learners of English. They did not receive any compensation or credit for the attendance.

On average, all participants were intermediate- and high-proficiency L2 speakers of English and they were selected from a BA- and MA-student population

of different ages. All the participants who completed the experiment had attended either a College BA or a Graduate School, with the exception of two participants who graduated in High School.

Before the experiment was administered, all participants were asked to complete a Language Profile Questionnaire (Vann et al., 2020) which was sent to them by email both in Italian and in English.

The 47-question survey was administered remotely on Qualtrics, which is an online platform that allows to automatically analyze the responses and reports of the questionnaires. Specifically, the questionnaire proceeded as follows:

First, participants were asked to provide bibliographical information and to inform us about their country of origin and the country where they were living at the time of the experiment. All participants were born and living in Italy, except for two participants who were living abroad when the experiment was administered.

In the second section of the questionnaire, the subjects' language history was investigated with specific reference to their knowledge, use and mastery of English, i.e. participants were asked at what age they started learning and using the language in different contexts (at school and with family and friends) and with different tools (social media, online games etc.). Furthermore, they were asked to list how many months (or years) they had spent travelling and/or living abroad and how frequently they were using English during the experiences. On the one hand, there was no significant difference among participants with regard to the age when they started learning or using the language, as they were all educated in Italy (primary and secondary school) and grew up in Italian families. On the other hand, all participants had different and more-or-less recent traveling experiences.

In order to assess participants' proficiency, in the third section of the questionnaire we asked them to self-rate their level of English on a 1-to-7 Likert scale, with specific reference to their *writing, speaking, reading* and *comprehension* abilities and moreover, participants were asked to estimate the weekly amount of hours they were spending *in contact with* or *using* English.

Significant differences emerged from participants' responses.



The table below illustrates the demographic data of our sample as regards their i) *level of education*; ii) *self-rated CEFR level in English*; iii) *self-rated scores by ability* and iv) *weekly amount of exposure to the L2 input*.

**Table 8. Sample demographic data**

Mean age	27:8 yrs
Gender	Female: 23 Male: 12
<b>Self-Rated CEFR Level</b>	
B1	11%
B2	26%
C1	49%
C2	14%
<b>Self-rated score by ability</b>	
Writing	5.08 (1.23) range: 1 to 7
Speaking	5.04 (1.29) range: 1 to 7
Reading	5.73 (0.93) range: 1 to 7
Listening	5.73 (0.93) range: 1 to 7
<b>Weekly exposure to the English language</b>	
> 40 h.	74%
< 40 h.	20%
Abroad	6%

As indicated in the table above, 69% of the participants who took part in the crosslinguistic priming experiment were attending Graduate School or were MA graduates, whereas 26% were College BA students and 2 participants out of 35 (6%) graduated in High School.

Because we were interested in their level of proficiency, we asked participants to self-rate their competence according to the CEFR standards (A1 to C2).

Overall, all participants were either intermediate- or high-proficiency L2 learners of English (nobody self-rated their level of English as A1 or A2, with the exception of one participant who only completed the questionnaire and was never sent the link to the experiment, as they did not respect the criteria for the sample selection). 37% of the participants considered themselves intermediate-proficiency speakers of English (11% self-rated their level as B1 and 26% considered themselves as B2-English speakers). 17 participants out of 35 (49%) considered their English level as C1 level according to the CEFR standards, and 14% of them rated their competence as C2 level.

Additionally, we decided to assign a frequency range to each participant, according to the weekly amount of hours they estimated to spend *in contact with* or *using* English. 57% and 74% of the sample spent less than 40 hours a week *in contact* and *using* English respectively. The percentage of speakers who estimated to spend more than 40 hours a week exposed to the linguistic input was about 37%, whereas only 20% of the sample estimated to spend more than 40 hours a week using English. As stated above, there were only two participants who were living abroad when the experiment was administered: one of them was living in the Netherlands and the other one was living in England. Both participants reported to speak English on a daily basis (168 hours a week).

To conclude, the table reports the mean scores and standard deviation by ability. Interestingly, there were no significant differences in the scores assigned to each skill (writing, speaking, reading and comprehension). As the table illustrates, the mean score for the *writing* skill was 5.08 (1.23). Similarly, the *speaking* competence was self-rated 5.04 (1.29) and both *reading* and *comprehension* abilities were rated with an average point of 5.73 (0.93).

As stated above, all participants received two emails: The first one including their ID number and a link which redirected them to the questionnaire on Qualtrics and a second one including a link to the experiment.

Importantly, all participants were asked to read and accept a consent form through which they were informed about i) the material presented during the trial, ii) the length of the experiment (about 30 minutes) iii) the data processing and iv) the researchers' personal contacts.

The consent form was approved by the Ethic Committee of Ca' Foscari University of Venice (see Appendix).

### 3.1.2 Materials and Design

The material consisted of 24 experimental items occurring in three conditions, i.e. *active*, *venire*-passive and *si-causative* passive primes; 72 filler items and 24 target pictures. Items were constructed on a 3x1 design and we therefore had 8 data points for each experimental condition.

Importantly, we created 6 lists to which experimental items were randomly assigned. *List 1*, *list 2* and *list 3* presented 24 fillers, 24 experimental items and 24 target pictures paired with a target verb to use for the description. In each list, all items appeared in one condition only.

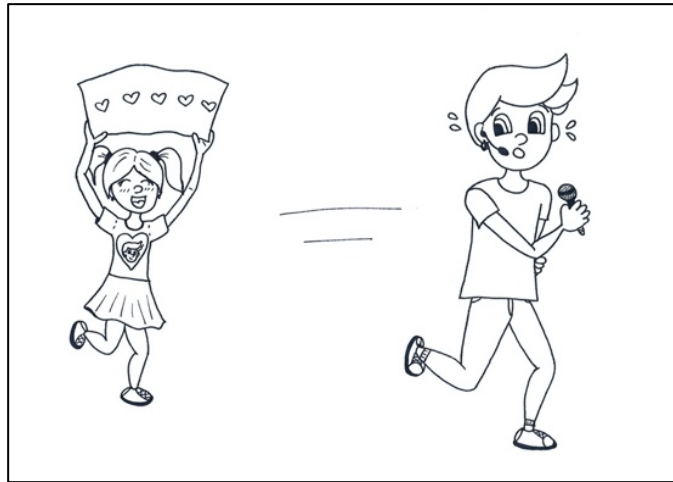
In order to counterbalance the order of item presentation, we additionally created *list 1a*, *list 2a* and *list 3a*, in which items occurred in the reversed order.

Importantly, there was no lexical overlap between prime stimuli and target pictures.

The table and figure below exemplify the experimental items:

**Table 9.** *Sample prime stimuli used in all conditions and target picture description*

<i>Active</i>	1a. L'artista	tatua	il cliente	<b>sulla</b> schiena
<i>Passive (venire)</i>	1b. Il cliente	viene tatuato	dall'artista	<b>sulla</b> schiena
<i>Si-Causative</i>	1c. Il cliente	si fa tatuare	dall'artista	<b>sulla</b> schiena
<i>Target image</i>	2. Fan	<i>follow</i> (verb hint)	singer	



**Fig.1.** Example of a target picture, item 24. (Verb hint: follow)

Two very-talented, high-school students were asked to prepare the 24 images which were used in the *picture description* task.

As illustrated in the figure above, all the target pictures presented one black-and-white drawn human agent performing an action towards the patient, which was drawn respecting the same features. The action was displayed in the center of the screen, by means of action lines. Additionally, the verb to describe the scene was displayed under the picture and participants were asked to use it for describing the scene with a simple sentence.

We furthermore balanced the position of agent- and patient-actors in the pictures, in order to avoid confounding variables and to prevent the elicitation of one or the other syntactic structure (active or passive). Hence, 12 pictures presented the agent on the right side of the screen and the patient on the left side and vice versa.

The experiment was constructed using Psycho.py, an advantageous software which allows to build experiments and run them online through Pavlovia.org.

Because the current circumstances did not allow us to run experiments in presence due to Covid-19 restrictions, it was necessary to recruit subjects and administer the priming experiment remotely.

### 3.1.3 Procedure

Participants were first sent a link which redirected them to the Language Profile Questionnaire (Vann et al., 2020) on Qualtrics.

Once their demographic and linguistic data were collected, they were sent a second link to the experiment on Pavlovia.org.

As the trial started, participants were presented with a *welcome* and *instruction* screen: a recorded voice explained the routine trial as well as the languages to use in each part of the task (see Appendix). Before starting the experimental trial, participants were also presented with two example screens: the first one displaying two example pictures of the task and the second one being a practice screen (see Appendix). The trial consisted of three phases:

i) *Reading and typing out one Italian filler sentence:*



ii) *Reading and typing out one Italian prime sentence:*



iii) Describing the displayed target image using a given target verb:



At the end of the experiment, participants were thanked for their participation and their responses were automatically saved on Pavlovia.org. They were furthermore asked if they were willing to take part in other linguistic experiment.

Overall, the experiment had a duration of about 30 minutes: 10 to 15 minutes for the compilation of the Language Profile Questionnaire (Vann et al., 2020) and 20 minutes for performing the priming experiment.

### 3.1.4. Scoring

We decided to analyze participants' responses by means of both a *strict scheme* and a *lax scheme* of coding criteria.

Strict scheme		
Label	Structure	Example
Strict active	NP or pron. + VP + NP or pron. Agent + target VP + patient	<i>The groom carries the bride</i> <b>Verb hint:</b> carry
Strict passive	NP or pron + VP + <i>by</i> -PP Agent + aux <sub>be</sub> VP + <i>by</i> -agent	<i>The bride has been carried by the husband</i> <b>Verb hint:</b> carry

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Strict other	Agent + VP + patient's body part	<i>The baby is scratching his mum's eye</i> <b>Verb hint:</b> carry
	Agent + modalVP + patient	<i>The old brother had to carry the little brother all day long.</i> <b>Verb hint:</b> hit
	Patient + VP	<i>The thief is being arrested</i> <b>Verb hint:</b> arrest
	Patient + get/have VP + by-agent	<i>The princess has her hair combed by the fairy</i> <b>Verb hint:</b> comb
	Passive within an infinitive subordinate	<i>The clown seems not so happy to be hit by the guy</i> <b>Verb hint:</b> hit
	Patient + aux <sub>have</sub> VP+ by-agent	<i>*The daughter has dressed by the mother</i> <b>Verb hint:</b> dress
	VP + patient	<i>Kiss a girl</i> <b>Verb hint:</b> kiss
	VP used improperly	<i>Waking someone is never easy</i> <b>Verb hint:</b> wake
		<i>The hairdresser is using a comb</i> <b>Verb hint:</b> comb

---

According to the strict scheme of coding criteria, only responses which presented both actors in the sentences were scored as *strict actives* and *strict passives*.

Specifically, sentences which had the agent in sentence-head position, as well as in the syntactic role of the subject, and furthermore included the target VP and the patient in sentence-final position were scored as *strict actives* (e.g. *The groom carries the bride*).

*Strict passives* were sentences which had the patient in the syntactic role of subject, the target VP preceded by the auxiliary *to be* (any tense) and the agent within a *by*-prepositional phrase (e.g. *The bride has been carried by the husband*).

Sentences which were considered as *strict others* presented different (and non-target) syntactic structures.

As the table illustrates, there were sentences which did not include the patient actor. Rather, the recipient of the action was a body part of the patient. These sentences were considered as *other actives*, as well as sentences which included a modal VP instead of the target verb as main verb (e.g. *The old brother had to carry the little brother all day long*).

*Other passives* were sentences which did not present the agent within a *by*-PP, i.e. truncated passive sentences (e.g. *the thief is being arrested*).

Moreover, participants produced sentences which presented the correct order of thematic roles according to the target image, yet they were produced with a wrong auxiliary (*have* instead of *be*), as for instance *\*the daughter has dressed by the mother*.

Participants also produced other types of syntactic structures: As presented in the table, there were sentences in which only the VP and the patient were expressed (e.g. *kiss a girl*) and other responses in which the target verb suggested beneath the image was used improperly (as a NP or other phrases), e.g. *waking someone is never easy* or *the hairdresser is using a comb*.



<b>Lax scheme</b>		
<i>Label</i>	<i>Structure</i>	<i>Example</i>
Lax active	Agent + target VP + patient	<i>The groom carries the bride</i> <b>Verb hint:</b> carry
	Agent + VP + patient's body part	<i>The baby is scratching his mum's eye</i> <b>Verb hint:</b> carry
	Agent + modalVP + patient	<i>The old brother had to carry the little brother all day long.</i> <b>Verb hint:</b> hit
Lax passive	Agent + aux.beVP+by-patient	<i>The bride has been carried by the husband</i> <b>Verb hint:</b> carry
	Patient + VP	<i>The thief is being arrested</i> <b>Verb hint:</b> arrest
	Patient + get/have VP + by-agent	<i>The princess has her hair combed by the fairy</i> <b>Verb hint:</b> comb
	Passives within an infinitive subordinate	<i>The clown seems not so happy to be hit by the guy</i> <b>Verb hint:</b> hit

---

Lax other VP + patient

*Kiss a girl*

**Verb hint:** kiss

VP used improperly

*Waking someone is never easy*

**Verb hint:** wake

*The hairdresser is using a comb*

**Verb hint:** comb

---

According to the lax scheme of coding criteria, all sentences which presented the action initiator and the recipient in the agent and patient roles respectively and furthermore included the target VP were scored as *lax actives*, regardless of i) the nature of the patient (whether it was a human actor or a part of its body) and ii) the use of the target VP (whether the target verb was the main verb of the sentence or it was preceded by a modal verb).

By the same logic, i) truncated passives; ii) passives which included the wrong auxiliary (*have* instead of *be*) and iii) English causative sentences with *have-* or *get-* auxiliary were scored as *lax passives*.

English causatives were particularly interesting, as not only do they present the same order of thematic roles with respect to Italian *si*-causative passives, but they also have similar semantic implications, as they express the willingness of the patient to receive the action by the agent.

*Lax other* sentences were sentences with no agent and therefore, a non-conjugated VP, as well as sentences with the target VP used as a NP (e.g. *The hairdresser is using a comb*).

### 3.2. Results

This section will present data analyses of participants' results both according to a lax and a strict coding scheme.

First of all, the total number, mean percentages and standard deviation of each type of response by prime condition will be shown and discussed, in order to observe whether or not a priming effect occurred in the sample and to what extent Italian *venire* and *si-causative* passives primed the production of English passives.

In the second place, it was decided to observe whether specific items had biased participants' responses and therefore influenced the type of syntactic structures produced in the task. That is, we were interested in observing whether significantly high percentages of passives were produced after the exposure to specific experimental items.

Moreover, an analysis by items also allowed us to observe whether priming had built up over the trial and for this reason, we compared the proportions of passives produced after items which occurred in the first and second half of the lists respectively.

As *proficiency* has been demonstrated to be a variable which predicts the strength of priming effect, it was decided to analyze participants' responses by self-estimated proficiency level, in order to ascertain whether or not participants' competence in English had modulated the strength of priming.

To conclude, it was decided to conduct a statistical T-test , in order to ascertain whether there was a significant difference between the mean proportions of English passives produced after an *active* or a *passive* condition.

We used Excel data analysis tools, with the purpose to prove that i) there was no difference in the priming effect observed after a between-language similar or different condition and that ii) the difference between the mean percentage of passives produced after *active* primes was significantly different from the mean percentage of English passives produced after a repeated exposure to a *passive* condition in Italian.

### 3.2.1. General results

**Table 10.** Total number, mean proportions and (standard deviation) of active, passive and other responses by condition according to strict coding criteria

Condition	Strict Active		Strict Passive		Strict Other	
	<i>n</i>	% ( <i>sd</i> )	<i>n</i>	% ( <i>sd</i> )	<i>n</i>	% ( <i>sd</i> )
Active	173	.72 (0.45)	24	.10 (0.30)	42	.17 (0.38)
<i>Venire</i> -passive	163	.67 (0.46)	32	.13 (0.34)	44	.18 (0.39)
<i>Si-causative</i> -passive	168	.70 (0.46)	29	.12 (0.32)	43	.18 (0.38)

The table above illustrates the total number, mean percentages and (*standard deviation*) of *strict actives*, *strict passives* and *other* responses by prime condition.

As illustrated in the previous section of this chapter, in the strict coding scheme we only included sentences expressing the agent and the patient within a NP<sub>AGENT</sub>+VP<sub>TARGET</sub>+NP<sub>PATIENT</sub> (*strict active*) or a NP<sub>PATIENT</sub>+aux<sub>BE</sub> VP<sub>TARGET</sub>+*by*-PP<sub>AGENT</sub> (*strict passive*) structure.

As can be seen from the table, the proportions of English passives increased by 3% and 2% following *venire*- and *si-causative* primes respectively, if compared to the proportions of English passives following active primes.

Taken together, the proportions of English passives following Italian passive primes increased by 15%, with respect to the proportions of English passives after the exposure to an Italian active sentence and this suggests that a priming effect was overall observed in our sample.

Table 11 reports the mean proportions of *lax actives*, *lax passives* and *other* responses by prime condition.

**Table 11.** Total number, mean proportions and (standard deviation) of active, passive and other responses by condition according to lax coding criteria

<i>Condition</i>	<b>Lax Active</b>		<b>Lax Passive</b>		<b>Lax Other</b>	
	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>	<i>n</i>	<i>% (sd)</i>
Active	194	.81 (0.39)	28	.11 (0.32)	17	.07 (0.26)
<i>Venire</i> -passive	184	.77 (0.42)	38	.15 (0.37)	17	.07 (0.26)
<i>Si-causative</i> -passive	192	.80 (0.40)	34	.14 (0.35)	14	.05 (0.23)

As the table illustrates, the mean proportions of *lax* passives produced after *venire*-passive primes and *si-causative* passive primes increased if compared to the proportion of *lax* passives produced after the exposure to active primes.

Specifically, 15% of passive description occurred after prior exposure to crosslinguistically similar passive, whereas 14% of English passives were produced after prior exposure to *si-causative* primes.

According to a lax scheme of coding criteria, all the sentences which included a patient in sentence-head position and in the syntactic role of a subject, the target verb (and a passive auxiliary) and the agent within a PP were scored as *lax passives*.

Hence, this category included regular and grammatically-correct *by*-passive sentences, as well as i) sentences with the wrong passive-auxiliary, i.e. *to have* instead of *to be* (e.g. \**The daughter has dressed by the mother*); ii) sentences with no *by*-PP, i.e. truncated passives (e.g. *The thief is being arrested*); iii) sentences with *get*- or *have*-auxiliary within an English-causative syntactic structure (e.g. *The princess has her hair combed by the fairy*) and iv) passive sentences within an infinitive, subordinate clause (e.g. *The clown seems not so happy to be hit by the guy*).

It seems worth illustrating the logic behind the decision to score these types of utterances as *lax* passives.

There were only 2 sentences which included a *have*-auxiliary instead of a *be*-auxiliary, which is grammatical in English:

*\*The daughter has dressed by the mother;*

*\*The child has cuddled by the grandmother.*

In both cases, the target pictures presented *the daughter* and *the child* in the action-recipient role, in accordance with the given description.

As regards truncated passives and passives within infinitive subordinate sentences, it was decided to score them as *lax* passives primarily because they are grammatically- and syntactically correct in English and also because the description was in line with the roles assigned to the actors depicted in the target images.

Interestingly, one high-proficiency (C2) participant produced four English causative sentences. Not only are these structures syntactically similar to both *si-causative* and *venire* passives in Italian, as they present a correspondent order of syntactic and thematic roles, but they also entail analogous semantic constraints. The four responses were:

1. *The princess has her hair combed by the fairy*

**Prime condition:** passive

**Target verb:** comb

2. *The girl gets kissed by the boy*

**Prime condition:** causative passive

**Target verb:** kiss

3. *The boy's face gets scratched by the woman*

**Prime condition:** active

**Target verb:** scratch

4. *The girl has her hair combed by the hair stylist.*

**Prime condition:** passive

**Target verb:** comb

These four sentences were of particular interest, as they were mainly produced after passive primes (*venire* and *si-causative*) and because the semantic- and syntactic similarities between prime and response allowed us to assume that the priming was semantically and syntactically driven. That is, both the syntactic and semantic properties of the prime sentence were detained in production.

### 3.2.2. Analysis by item

We conducted an analysis by item and specifically, we calculated the mean proportions and (*standard deviation*) of *lax passive* sentences with respect to each one of the 24 experimental items by condition, since we were interested in ascertaining whether our items had biased participants' responses and therefore influenced results.

**Table 12.** Total number, mean proportion and (*standard deviation*) of *lax passives* by condition (*active and passive*): *items analysis*

<i>Item</i>	<i>Prime conditions</i>					
	<b>Active prime</b>			<b>Passive prime (<i>venire-</i> and <i>si-causative</i>)</b>		
	<i>n</i>	<i>%</i>	<i>(sd)</i>	<i>n</i>	<i>%</i>	<i>(sd)</i>
Item 1	1	.13	<i>(0.35)</i>	3	.14	<i>(0.35)</i>
Item 2	2	.17	<i>(0.39)</i>	3	.17	<i>(0.38)</i>
Item 3	-	-	-	3	.15	<i>(0.36)</i>
Item 4	2	.25	<i>(0.46)</i>	4	.18	<i>(0.39)</i>
Item 5	-	-	-	1	.06	<i>(0.23)</i>
Item 6	1	.10	<i>(0.32)</i>	5	.25	<i>(0.44)</i>
Item 7	-	-	-	3	.14	<i>(0.35)</i>
Item 8	3	.25	<i>(0.45)</i>	2	.11	<i>(0.32)</i>
Item 9	1	.10	<i>(0.32)</i>	6	.30	<i>(0.47)</i>
Item 10	-	-	-	5	.23	<i>(0.42)</i>
Item 11	1	.08	<i>(0.29)</i>	1	.06	<i>(0.23)</i>

---

Item 12	3	.30	(0.48)	2	.10	(0.30)
Item 13	1	.13	(0.35)	2	.09	(0.29)
Item 14	2	.17	(0.39)	5	.28	(0.46)
Item 15	1	.10	(0.32)	4	.20	(0.41)
Item 16	-	-	-	3	.14	(0.35)
Item 17	-	-	-	3	.17	(0.38)
Item 18	-	-	-	2	.10	(0.30)
Item 19	2	.25	(0.46)	3	.14	(0.35)
Item 20	1	.08	(0.29)	1	.06	(0.23)
Item 21	1	.10	(0.32)	0	-	-
Item 22	4	.50	(0.53)	5	.23	(0.42)
Item 23	1	.08	(0.29)	1	.06	(0.23)
Item 24	1	.10	(0.32)	5	.25	(0.44)

---

As illustrated in table 12, item 22 appeared to have boosted the production of passive sentences, independently of the condition of the preceding prime sentence.

In fact, a significantly high proportion of passive sentences was produced after the active condition (50%) and oppositely, passive primes did not enhance the production of English passives, as we would predict. Specifically, item 22 was:

**Active condition:**

*Il fratello accarezza la sorellina neonata sulla guancia*

**Venire-passive condition:**

*La sorellina viene accarezzata dal fratello sulla guancia*

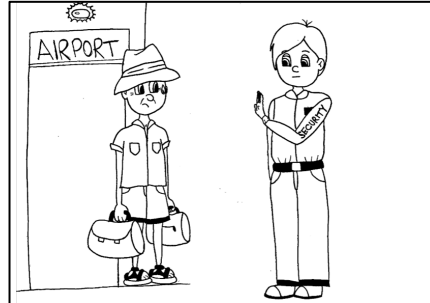
**Si-causative passive condition:**

*La sorellina si fa accarezzare dal fratello sulla guancia.*



**Target verb:** *stop*

**Target image:**



Drawing any conclusions based on a single observation would be presumptuous. However, this result is indeed interesting and conceivably, it might be assumed that the scene depicted in the target image assigned to this specific item had boosted the production of passives in English.

### 3.3.3. Analysis of the priming effect over time

As stated above, it was of our concern to observe whether the effect of priming was (or was not) increasing over the trial. For this reason, we divided our items based on their occurrence time over the trial, i.e. whether they were presented in the first or second half of the six experimental lists.

**Table 13.** Total number, mean proportions and (standard deviation) of lax passives in the 1<sup>st</sup> and 2<sup>nd</sup> half of the trial: item analysis

<i>Item</i>	<i>Item position</i>					
	<b>1st half of the trial</b>			<b>2nd half of the trial</b>		
	<i>n</i>	<i>%</i>	<i>(sd)</i>	<i>n</i>	<i>%</i>	<i>(sd)</i>
Item 1	-	-	-	4	.24	(0.44)
Item 2	-	-	-	5	.29	(0.47)
Item 3	-	-	-	3	.18	(0.39)
Item 4	2	.15	(0.38)	4	.24	(0.44)

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Item 5	-	-	-	1	.06	(0.24)
Item 6	1	.08	(0.28)	5	.29	(0.47)
Item 7	1	.08	(0.28)	2	.12	(0.33)
Item 8	1	.08	(0.28)	4	.24	(0.44)
Item 9	4	.31	(0.48)	3	.19	(0.40)
Item 10	1	.08	(0.28)	4	.24	(0.44)
Item 11	-	-	-	2	.12	(0.33)
Item 12	1	.08	(0.28)	4	.24	(0.44)
Item 13	3	.18	(0.39)	-	-	-
Item 14	4	.24	(0.44)	3	.23	(0.44)
Item 15	5	.29	(0.47)	-	-	-
Item 16	2	.12	(0.33)	1	.07	(0.27)
Item 17	2	.12	(0.33)	1	.08	(0.28)
Item 18	2	.12	(0.33)	-	-	-
Item 19	2	.12	(0.33)	3	.23	(0.44)
Item 20	1	.06	(0.24)	1	.08	(0.28)
Item 21	1	.06	(0.24)	-	-	-
Item 22	6	.35	(0.49)	3	.23	(0.44)
Item 23	1	.06	(0.24)	1	.08	(0.28)
Item 24	3	.18	(0.39)	3	.23	(0.44)

---

Overall, the mean proportions of passives produced in the second half of the trial did increase with respect to the proportions of English passives occurring in the first half of the trial.

This result provides evidence for priming having a cumulative nature, and its magnitude increasing over time as an effect of the repetitive exposure to a manipulated linguistic input.

**Table 14.** Total number, mean proportions and standard deviation of *lax* passives by condition in the 1<sup>st</sup> and 2<sup>nd</sup> half of the trial.

<i>Condition</i>	<i>Item position</i>					
	<b>1st half of the trial</b>			<b>2nd half of the trial</b>		
	<i>n</i>	<i>%</i>	<i>(sd)</i>	<i>n</i>	<i>%</i>	<i>(sd)</i>
Active prime	11	.09	(0.29)	17	.14	(0.35)
<i>Venire</i> -passive prime	17	.14	(0.35)	21	.18	(0.38)
<i>Si</i> -causative passive prime	15	.12	(0.33)	19	.16	(0.37)

As illustrated in table 14, the proportions of passives produced after active primes in the second half of the trial increased by 5% with respect to the proportions of passives produced at the beginning of the experiment.

As regards *venire*- and *si-causative* passive primes, the proportions of English passives following both conditions increased by 4% in the second half of the experiment and these results suggest that priming builds up as an effect of a continuous exposure to the input over time and that furthermore, a priming effect can persist over time (Bock & Griffin, 2000).

#### 3.3.4. Analysis by proficiency

With the purpose to observe to what extent *proficiency* modulates the strength of priming effect (Hartsuiker et al., 2004), we decided to analyze our data depending on participants' self-rated level (CEFR). We therefore divided them into *intermediate*-proficiency speakers, i.e. B1-B2 CEFR level, and *high*-proficiency speakers, i.e. C1-C2 CEFR level.

The mean proportions (*and standard deviation*) of *active*, *passive* and *other* responses were calculated based on the *lax* scheme of coding criteria, as shown in the table below.

**Table 15.** Mean proportions and (standard deviation) of active, passive and other responses (lax scheme) by condition. Variable: proficiency

<i>Condition</i>	<i>Proficiency (lax scheme)</i>					
	CEFR B1-B2			CEFR C1-C2		
	Active	Passive	Other	Active	Passive	Other
Active	.88 (0.31)	.04 (0.20)	.07 (0.25)	.76 (0.43)	.16 (0.37)	.06 (0.26)
<i>Venire</i> -passive	.78 (0.41)	.12 (0.33)	.09 (0.28)	.76 (0.43)	.18 (0.38)	.07 (0.24)
<i>Si</i> -causative passive	.81 (0.38)	.11 (0.31)	.07 (0.25)	.79 (0.41)	.16 (0.37)	.05 (0.22)

As table 25 illustrates, the mean percentages of passives produced by *high*-proficiency participants (C1-C2) was 18% after prior exposure to *venire*-passive primes and similarly, 16% after *si-causative*-passive primes.

If compared with B1-B2 participants, not only did C1-C2 produced higher percentages of English passives in both passive conditions (+ 5% and + 6% respectively), but they also produced a moderately high percentage of passives following active primes (16%).

In contrast, B1-B2 participants produced 4% of passive sentences after prior exposure to the active condition.

We acknowledge the risk of drawing any conclusions, as the sample recruited for the experiment did not have an equal and balanced representation of *high*- and *intermediate*-proficient participants. Yet, these results conceivably suggest that proficiency is a variable that may predict the extent to which bilinguals *share* syntactic information of their L1 and L2.

if the pattern observed was found with a bigger sample, results would support the existence of an integrated mechanism of language processing in bilinguals (Hartsuiker et al., 2004).

### 3.3.5. Statistical inference: T-Test

In order to provide further evidence for our results, we decided to compare the mean proportions of passives produced after an Italian *active* condition and after a *passive* condition, regardless of its crosslinguistical correspondence.

We hypothesized that the exposure to a specific syntactic structure does boost the repetition of the same structure in production and therefore, we wanted to confirm that Italian passives (either *venire* or *si-causative* passives) did prime the production of passives in English to a higher extent with respect to active structures. The *lax scheme* was adopted for the analysis of data.

**Table 16.** *T-Test results: mean proportion of passives after active condition vs. mean proportion of passives after passive condition*

<b>T-test: Paired two Sample for Means</b>		
	<i>Active condition</i>	<i>Passive condition</i>
Mean	0,93333333	2,4
Variance	1,71954023	10,937931
Observation	30	30
Pearson Correlation	0,62654816	
Hypothesized		
Mean Difference	0	
df	29	
Stat t	-2,9890528	
P(T<=t) one-tail	0,00282569	
t Critical one-tail	1,69912703	
P(T<=t) two-tail	0,00565137	
t Critical two-tail	2,04522964	

The *p-value* we obtained from the two-tailed T-test (with a confidence interval of 95%) was  $p = 0.005$ .

This value allows to reject the null-hypothesis and it is therefore plausible to conclude that the difference between the two means is significant.

This result allows us further confirm our predictions, according to which the exposure to a specific syntactic structure in one language (L1) does enhance the repetition of the same syntactic structure in the other language (L2).

However, in order to fully answer our research question, it was necessary to conduct a further analysis with the purpose to ascertain whether priming was modulated by a grammatical and semantical correspondence between Italian and English passives or rather, whether its effect are driven by shared syntactic properties across prime and target structures.

In other words, we were interested in understanding whether *si-causative* passives do have an equally strong priming effect with respect to *venire* passives, which are similar to English passives.

If we found no difference between the two condition, our results would provide evidence for priming being syntactically driven.

**Table 17.** *T-Test results: mean proportion of passives after venire-passive condition vs. mean proportion of passives after si-causative-passive condition*

<b>T-test: Paired two Sample for Means:</b>		
	<i>Venire-passive condition</i>	<i>Si-causative passive condition</i>
Mean	1,133333	1,266667
Variance	2,809195	3,167816
Observation	30	30
Pearson Correlation	0,831498	
Hypothesized		
Mean Difference	0	
df	29	
Stat t	-0,724491	

P(T<=t) one-tail	0,237285
t Critical one-tail	1,699127
P(T<=t) two-tail	0,47457
t Critical two-tail	2,04523

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The table above reports the results of the two-tailed T-test (with a confidence interval of 95%).

We obtained a *p-value* = 0.4 and this allows us to conclude that there is no difference in the mean proportions of passives produced after *venire-* or *si-causative* conditions.

Hence, it is also plausible to assume that priming equally occurred after crosslinguistically similar and different structures and we can conceivably confirm the hypothesis of priming being syntactically driven, regardless of semantic and lexical properties of the utterances, although a lexical repetition across prime and target sentences evidently modulate its magnitude.

### 3.3. General discussion

The crosslinguistic priming experiment presented in this chapter primarily aims at understanding whether bilinguals' syntactic representations are shared in bilinguals with respect to crosslinguistically different syntactic structures.

Specifically, the experiment was administered to intermediate- and high-proficiency Italian-English bilinguals. We recruited 35 participants through personal contacts and we asked them to complete a Language Profile Questionnaire (Vann et al., 2020), as we were interested in ascertaining the extent to which priming and proficiency interact in bilinguals.

The material was composed of 24 Italian prime items, 24 target images and 72 filler items. Items were constructed on a 1x3 Latin Square design, we thus included a single *animacy* condition (*animate agent; animate patient*) and three syntactic structures (*active, venire-passive and si-causative-passive*). We therefore used two alternating transitive structures: Italian active and passive sentences.

Because we were interested in understanding to what extent syntax is shared with respect to between-language different structures, we subsequently added one critical condition, i.e. a crosslinguistically non-correspondent syntactic structure: Italian *si*-causative passives, e.g. *Il figlio si fa aiutare dal papà per la verifica*.

It seems worth providing an explanation for the decision to construct our material on a 3x1 design (i.e. 1 *animacy* condition: Animate agent, animate patient x 3 *syntactic* conditions: Active, *venire*-passive and *si*-causative passive).

First of all, our study aimed at understanding whether priming occurred after the exposure to structures which have no direct correspondence across the languages that speakers master. Specifically, we were interested in understanding whether *si*-causative passives in Italian were mapped and processed as regular passives in English.

This prediction is furthermore supported by the linguistic analysis of *si*-causative passives provided by Manetti and Belletti (2015) who argued that *si*-causative passives are derived by the same syntactic movement of *copular* passives in Italian, which was theorized by Collins (2005), i.e. the *smuggling theory*.

Furthermore, because active structures are usually preferred to passives in production and because our participants were L2 speakers of English, we decided to increase the exposure to passive primes by adding a passive condition to our material design, so as to increase the probability of L2 speakers producing English passives during the trial.

Similarly, Hartsuiker et al. (2004, p. 410) constructed their experimental material in such a way as to increase the likelihood of passive production, as they likewise tested L2 speakers. Specifically, they manipulated the *animacy* condition so as to have a balanced number of *animate patients* and *inanimate patients*, and *inanimate agents* only. They furthermore manipulated the *location* of the actors within the target pictures, i.e. patients were only presented on the right- and patients on the left-side of the image (Hartsuiker et al., p. 410), as these conditions have been proven to enhance the production of passive sentences (see Bock, 1986 and Hartsuiker & Kolk, 1998a).



By the same logic, we kept two passive conditions and a single active condition in our material, in order to boost the production of passive sentences in English, a language to which our participants were not regularly exposed.

In addition, we acknowledge the essentiality of experimental material being as much controlled as possible, in order to avoid confounding variables to influence the responses.

Because our study was not a follow-up study and we therefore created novel material, and because we were investigating a syntactic structure which entails specific semantic constraints, we decided to keep a single animacy condition and to only focus on the manipulation of syntactical and grammatical properties of the sentences.

We created 6 different versions of our experiment by counterbalancing priming conditions and item order for each one of the experimental lists.

We furthermore balanced the position of each agent and patient within the target pictures: 12 agent were presented on the right and 12 agent were presented on the left. The position of the patients was counterbalanced by the same logic.

Participants were administered a picture-description task whereby they had to read and type out two Italian sentences (one filler and one prime) and describe a picture in English.

Results were analyzed according to both a *lax*- and a *strict*-scheme of coding criteria. According to the lax scheme of coding criteria, passive sentences also included i) *truncated passives*; ii) *passives with a wrong auxiliary*; iii) *passives within an infinitive subordinate sentence* and iv) *English causatives*.

Taken together, our results suggest that priming did occur across the sample of participants who completed the task.

We furthermore decided to conduct a statistical analysis to compare the mean proportions of passive sentences produced after i) Italian active and ii) Italian passive primes (both *venire*- and *si-causative*-passives), by taking into account both *venire*- and *si-causative* passives as a single *passive* condition.

In keeping with the logic we followed for constructing our material, we considered whether the repetitive exposure to passive constructions in the L1,

regardless of their semantical similarities across languages, enhanced the production of the same structure in L2 speakers.

From the results of the two-tailed T-test (confidence interval 95%) we might conceivably conclude that the exposure to a *passive* prime in Italian did enhance the production of passive sentences in English ( $p\text{-value}=0.005$ ).

Interestingly, we found no difference in the mean proportions of passives following a *venire*- or a *si-causative* prime ( $p\text{-value}=0.4$ ). That is to say, the extent to which between-language correspondent structures prime passives in English is not significantly different from the strength of priming observed after the exposure to non-correspondent structures between languages (*si-causative* passives).

This value additionally allows us to suggest that priming was essentially driven by a syntactic repetition across sentences and that the semantic constraints entailed in the *si-causative*-prime condition did not reduce its magnitude.

We furthermore observed that participants who self-rated their level of English as C1-C2 showed a stronger priming effect if compared to B1-B2 participants. The sample size did not allow us to draw confident and assertive conclusions. Yet, the higher proportions of passives produced by C1-C2 participants is consistent with the *Shared-Syntax Account* (Hartsuiker et al., 2004). That is, bilinguals start sharing syntactic information between languages as an effect of increasing proficiency.

Finally, our findings provide further evidence for priming having a cumulative nature (Hwang & Shin, 2019).

Thereafter, we can conceivably conclude that not only does priming persist over time but also that its magnitude increases as an effect of a repetitive exposure to a manipulated linguistic input (Bock & Griffin, 2000).

This result would therefore provide further evidence for priming being a valuable and worth-of-investigation method of implicit learning.

## CONCLUSIONS

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The study presented in this dissertation aimed at a deeper understanding of the systems which underlie language processing and production in proficient Italian-English bilinguals.

35 native speakers of Italian, L2 learners of English were tested in the crosslinguistic priming experiment: They were asked to read and type out Italian filler- and prime items and subsequently, they were shown a picture and a target verb to elicit the production of simple sentences in English.

In the first chapter of the present dissertation, we presented the literature background with a narrow focus on *the priming paradigm* and specifically, on *crosslinguistic priming* as a method to assess whether syntax is (or is not) shared between languages (*Shared-Syntax Account*, Hartsuiker et al., 2004). Moreover, we provided an overview of the processes which underlie the *acquisition of a second language*, as well as an in-depth analysis of the syntactic movement and semantic constraints entailed in the experimental structures which were used for the priming study, i.e. Italian *si-causative* passives.

In chapter 2, we presented the two preliminary phases of our study: i) The *item-norming* phase and ii) the *pilot* phase. During the norming phase, 14 Italian native speakers were asked to rate 24 experimental prime sentences presented in the *si-causative*-passive condition by means of a 1-to-7 Likert scale, with 1 being *non-acceptable in Italian* and 7 being *perfectly acceptable in Italian*. 6 participants were recruited for the pilot phase which essentially served to ensure that the online experiment was working correctly and that the instructions for the task were straightforward and unambiguous.

In the third chapter we presented the crosslinguistic priming experiment which included two phases: First, participants were asked to complete a Language Profile Questionnaire (Vann et al., 2020) to assess their level of proficiency in English and thereafter, they were administered the priming experiment which included a picture-description task.

Overall, our findings show a quite strong priming effect, as a higher number of English passives was produced after prior exposure to Italian passive sentences regardless of their similarities between the two languages.

Hence, *si*-causative passives were shown to prime passive sentences in production to the same extent *venire* passives did.

Conceivably, we can conclude that our results provide evidence for priming being syntactically driven and not dependent on semantic similarities between prime and target sentences.

Additionally, our findings revealed that C1-C2 participants produced more English passive sentences if compared to B1-B2 participants. This result is consistent with Hartsuiker et al. 's (2004) *Shared-Syntax Account* which predicts a stronger effect of priming as a consequence of increasing proficiency in mastering the L2.

Importantly, our results confirmed that priming has a cumulative nature and its effect builds up over time. Indeed, our results showed that a higher number of English passives occurred in the second half of the trial, as a consequence of the activation of syntactic information which *persists* over time (Bock & Griffin, 2000).

We acknowledge that the size of the sample recruited for the experiment was not numerous enough to draw assertive conclusions and to conduct further statistical analyses on our data.

Thereafter, we suggest a replication of the study with a bigger sample of participants which should be balanced by proficiency level, in order to better ascertain the extent to which this variable manipulates the strength of priming in L2 bilinguals.

We furthermore noticed that some of our participants showed difficulties in properly understanding the task instructions: Despite participants being shown two instruction screens and being explained the task by means of a recorded voice, 5 of them failed to perform the trial correctly.

We therefore believe that the languages to use in each part of the trial should have been better specified, in order to avoid any misunderstandings. However, we also consider any misinterpretations of the task being due to the fact that the experiment had to be run remotely.

In our study, we decided to manipulate the passive condition by adding a structure which does not correspond between Italian and English, as we were interested in assessing whether *si-causative* passives were processed as *venire* passives by L1 Italian speakers.

If the purpose of the study was to investigate the mental representation of crosslinguistically non-correspondent structures, we suggest a replication of this study by reversing the priming direction (i.e. L2 prime; L1 target).

This hypothesis is supported by Zanaga's results (2020), whose study entailed a crosslinguistic priming paradigm in the L2-L1 direction. Zanaga's (2020) participants showed a stronger priming effect if compared with the participants recruited for our study. The percentages of passives produced after English passive primes (when the agent was *inanimate* and the patient was *animate*) increased by 19% and 20% according to the *strict-* and the *lax-scheme* respectively. Presumably, the stronger priming effect observed in Zanaga's study (2020) may have been due to the i) direction of priming, as it is more likely for L1 speakers to produce passive sentences in their dominant language, and to the ii) manipulation of *animacy*, which has been proven to increase the likelihood of passives in production (Bock, 1986; Hartsuiker & Kolk, 1998a; Hartsuiker, 2004).

We therefore suggest to replicate the present study by adopting the opposite priming direction, i.e. L2-L1, and to investigate English causative sentences with *have-auxiliary* (e.g. *The girl had her hair cut by the hairdresser*) and moreover, we believe that a manipulation of the *animacy* condition might improve the experimental design.

To conclude, our results provide evidence for priming persisting over time and building up as an effect of the repetitive exposure to the same syntactic structure: That is, the activation of a syntactic structure allows speakers to store and process it and eventually, to represent it as shared across the languages that they master.

Syntactic priming is therefore a worth-to-investigate method of implicit learning, which can be integrated with more explicit approaches of language teaching.

The following proposal is supported by Weber et al. 's (2019) study, who conducted an experiment which implied two paradigms, i.e. the *syntactic priming* as a method of implicit learning, and an *artificial-language paradigm*.

Specifically, they invented the *Alienese* language (Weber et al., 2019) in order to have full control on the prime input to which participants were exposed during the priming experiment. They therefore created a language including 36 transitive verbs, 10 intransitive verbs and 4 novel nouns within 4 syntactic structures. Among them, two were similar-to- and allowed-in-Dutch syntactic structures, i.e. transitive SVO-structures and intransitive SV-structures (which were used as filler items).

On the other hand, they also included two syntactic structures which were not allowed in the Dutch language, i.e. transitive VOS-structures and transitive OSV-structures.

Weber et al. (2019) were interested in ascertaining to what extent beginner learners can be primed at the earliest stages of language acquisition.

The study was divided into four phases with the first and second phases being training sections, and the third and fourth phases being experimental sections. Two experimental sections were therefore included in the study: The first one was conducted on day 3 and the second one after six days (day 9).

Participants performed three tasks: i) a comprehension task and ii) a reading-aloud task, which were completed during the experimental sections and at the end of each sections, they were asked to carry out a iii) translation task (*Alienese* into Dutch).

Results were compelling, as not only did participants improve in translating the *Alienese* language into Dutch, but they also showed a stronger syntactic priming effect after the second experimental section. Specifically, the percentage of correct answers increased by 15.8% from the third to the ninth day of the study. Comparing the results of Day 2 (27.98%) and Day 9 (64.76%), participants' correct responses increased by 36.78%.

Moreover, Weber et al. (2019) found a significant improvement in participants' reading performances when the prime and the target presented a syntactic- and lexical repetition. The same pattern was observed in comprehension.

Weber et al. (2019) therefore concluded that beginner learners are sensitive to syntax and that there is a similarity between L1- and L2-acquisition processes.

Importantly, they found that adult beginner learners can be primed with novel word orders. This compelling result suggests that speakers are sensitive to new syntactic structures, regardless of their dominant language.

On this basis, we suggest a follow-up intervention study entailing both a syntactic priming- and an artificial language paradigm, which would be addressed to L1 speakers of Italian and L2 beginner learners of English.

Specifically, the intervention should include three phases: i) a pre-test phase, in order to assess the baseline mean percentage of production and comprehension of an English (alternating) syntactic structure which does not have a direct translation in Italian (we suggest English *get-* and *have-causatives*); ii) an experimental phase including a syntactic priming- and artificial language paradigm, i.e. *artificial-Italian*, and to conclude, iii) a post-test phase which aims at ascertaining whether participants' performances improved as an effect of syntactic priming.

With regard to the *artificial-Italian* language, we suggest to readapt the Italian syntax with respect to the to-be-taught English syntax. That is, if the experiment was aiming at teaching English causative structures to L2 beginner learners of English, the prime sentence should be as follows:

Target English Causative sentence:

*Mary had her hair cut*

Correct Italian translation:

*Maria si è tagliata i capelli*

*Maria ha tagliato i capelli*

*Maria è andata a tagliare i capelli*

*Maria è andata a tagliarsi i capelli*

Prime sentence in *artificial-Italian*:

*Maria ha avuto i suoi capelli tagliati*

Mary had her hair cut

We believe that furthering the research on syntactic priming as a tool for language teaching and learning and encouraging the use of priming in language education would be a great contribution to the field.

In fact, not only would prime serve as an implicit-learning method, but it could also be exploited to explicitly show L2 beginner learners the analogies and the differences between their L1 and L2 for the acquisition of novel (and crosslinguistically different) syntactic structures.



## APPENDIXES

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### APPENDIX A: Recruitment

#### Example, List 1 pilot

Ecco il link per svolgere il pilot dello studio rivolto ad apprendenti inglese L2:

<https://run.pavlovia.org/IlariaVenagli/pilot/html>

- Clicca sul link
- L'esperimento verrà caricato su pavlovia.org
- è necessario svolgere l'esperimento su un PC. Non è possibile farlo da cellulari o tablet.

Una volta terminato l'esperimento, che avrà una durata di ca. 20/30 minuti, ti chiedo di comunicarmi eventuali errori o malfunzionamenti (puoi usare questo indirizzo e-mail oppure l'indirizzo 873770@stud.unive.it).

Errori possibili:

- o Errori di natura linguistica (grammaticali, di sintassi, di significato)
- o Difficoltà di comprensione/interpretazione delle immagini
- o Malfunzionamenti di tipo tecnico (comandi non accettati, tastiera limitata ecc.)

Ti ringrazio per la partecipazione e la pazienza.

Ilaria

The first slides of the experiment presented participants with the consent form. They were asked to press "s" to agree, and "n" to disagree.

La ricercatrice è autorizzata ad archiviare per la durata del progetto di ricerca tutti i dati personali (compresi quelli acquisiti preliminarmente e quelli raccolti tramite il questionario sul background linguistico e socio-demografico) in formato cartaceo e digitale.

La ricercatrice è autorizzata a conservare tutti i dati personali (compresi quelli acquisiti preliminarmente e quelli raccolti tramite il questionario sul background linguistico e

socio-demografico) in formato cartaceo e digitale dopo la conclusione del progetto di ricerca.

La ricercatrice è autorizzata a condividere con altri/e ricercatori/trici per soli scopi scientifici tutti i dati personali (compresi quelli acquisiti preliminarmente e quelli raccolti tramite il questionario sul background linguistico e socio-demografico) in formato cartaceo e digitale dopo la conclusione del progetto di ricerca.

Participants were recruited through personal contacts and social media (Facebook and Instagram). They were privately asked if they were willing to participate and take part in the study. As they agreed, they were sent the following e-mail, with a link to the English and Italian version of the language profile questionnaires on Qualtrics.

Hello!

Thank you for deciding to participate in our studies on how speakers of different languages understand and produce expressions in their first, second language or other language. Your participation is very much appreciated. By participating in our studies you will contribute to a better understanding of how the multilingual mind works.

If you decide to continue participating, you will be asked to use an ID number each time.

Your unique ID number is (INSERT ID here).

You will need your ID number each time you participate in a study, so please keep it on hand.

Before you begin, we will first need a bit of information about your linguistic background, so we will ask you to fill out our Linguistic Profile Questionnaire ([link here for the English version](#)). Once that is completed, I or one of my colleagues will contact you via e-mail and provide you with the link to my/ their study. If you have given your consent to participate in more than one study, another colleague may contact you after that.

If you have any questions or concerns, you can contact us at any time.

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Ciao!

Ci sembra giusto dare la possibilità a chi vuole di compilare il questionario in lingua italiana, quindi abbiamo creato una versione in Italiano. Per questo motivo, abbiamo riportato anche tutte le informazioni utili in Italiano. Quindi d'ora in avanti le e-mail saranno sia in Italiano che in Inglese.

Grazie per aver deciso di partecipare ai nostri studi su come parlanti di diverse lingue comprendono e producono espressioni nella loro prima lingua, seconda lingua o altre lingue. Apprezziamo molto la tua partecipazione. Partecipando ai nostri studi contribuirai a una migliore comprensione del funzionamento della mente multilingue.

Se deciderai di continuare a partecipare, ti sarà chiesto di usare un numero identificativo ogni volta.

Il tuo numero ID è stato comunicato nella e-mail nella versione inglese.

Ti servirà il tuo numero identificativo ogni volta che parteciperai in uno studio, quindi, per favore, tienilo a portata di mano.

Prima di iniziare, avremo bisogno di qualche informazione riguardo al tuo background linguistico, quindi ti chiederemo di compilare il Questionario sul Profilo Linguistico (link qui per la versione italiana). Una volta completato, io o una delle mie colleghe ti contatteremo via e-mail e ti forniremo il link al suo studio. Se hai dato il consenso a partecipare in più di uno studio, un'altra collega potrebbe contattarti successivamente. Se dovessi avere domande o dubbi, ricordati che puoi contattarci in qualunque momento.

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Once participants had completed the questionnaires, they were sent another e-mail with the link to the study, which was run on Pavlov.org.

### **Example List 1**

Ciao!

Grazie di nuovo per aver dato la tua disponibilità a partecipare allo studio per la mia tesi di laurea.

Ora che hai compilato il Questionario sul Profilo Linguistico, ti lascio il link al mio esperimento: [https://bembolab.fra1.qualtrics.com/jfe/form/SV\\_3t5oWpNjrnXhZmB](https://bembolab.fra1.qualtrics.com/jfe/form/SV_3t5oWpNjrnXhZmB)

Dopo aver letto il consenso informato e accettato di partecipare allo studio, sarai automaticamente reindirizzato/a allo studio stesso.

Ti chiedo gentilmente di **inserire il tuo numero ID** nella casella partecipante/participant, quando si avvierà l'esperimento.

Il numero ID ti è stato fornito nella prima mail.

All'interno dello studio sono riportate le istruzioni e un esempio guidato.

Il compito è semplice e **non esistono risposte giuste o sbagliate**. Quindi, non preoccuparti per il tuo livello di inglese.

Lo studio avrà una durata di ca. 20/30 minuti.

Se dovessi avere domande o dubbi, ricordati che puoi contattarmi in qualunque momento.

Grazie mille per la tua disponibilità!

## **APPENDIX B: Consent Form**

### **Modulo per l'espressione del consenso informato**

*Mental representations of crosslinguistically different structures in Italian-English high-proficiency bilinguals. The case of si-causative passives.*

Gentile partecipante,

Il presente studio è condotto dalla studentessa Ilaria Venagli sotto la supervisione della Professoressa Giulia Bencini, del Dipartimento di Studi Linguistici e Culturali Comparati dell'Università Ca' Foscari di Venezia sulla piattaforma online Pavlovia.org. Accettando questo modulo, esprime il suo consenso alla partecipazione allo studio e alle attività in esso incluse.

La partecipazione a questo studio è volontaria e potrà decidere di abbandonarlo in qualsiasi momento senza alcun tipo di conseguenza negativa.

Il presente studio è rivolto a soggetti di età superiore a 18 anni, madrelingua italiani e apprendenti inglese L2 con diversi livelli di competenza. L'interesse principale è quello di indagare la rappresentazione linguistica per strutture sintattiche non corrispondenti tra le lingue di competenza del parlante. Nello specifico, lo studio si propone di contribuire alla ricerca psicolinguistica nell'ambito del bilinguismo. Le attività proposte potranno coinvolgere la presentazione di frasi in italiano da leggere e ricopiare e la presentazione di immagini da descrivere in lingua inglese. Infine, potremmo chiederle di compilare un breve questionario sul profilo linguistico, il *background* familiare e il percorso educativo.

### **Informativa sul trattamento dei dati nell'ambito del progetto: ai sensi dell'art.13 del Regolamento UE 2016/679 ("Regolamento")**

Con il presente documento, l'Università Ca' Foscari Venezia ("Università") le fornisce informazioni in merito al trattamento dei dati personali raccolti all'interno del progetto di tesi/ denominato:

*“Mental representations of crosslinguistically different structures in Italian-English high-proficiency bilinguals. The case of si-causative passives.”*, che si prefigge di indagare la rappresentazione sintattica di strutture non corrispondenti tra italiano e inglese, in nativi italiani apprendenti inglese L2 ed è condotto dalla studentessa Ilaria Venagli e supervisionato dalla Professoressa Giulia Bencini. Ove necessitasse di ulteriori informazioni relative al progetto, la preghiamo di contattare il Principal Investigator scrivendo all’indirizzo di posta elettronica [873770@stud.unive.it](mailto:873770@stud.unive.it).

Il progetto è stato redatto conformemente agli standard metodologici del settore disciplinare interessato ed è depositato presso il Dipartimento/Laboratorio BemboLab – Dipartimento di Studi Linguistici e Culturali Comparati dell’Università Ca’ Foscari Venezia ove verrà conservato per cinque anni dalla conclusione programmata della ricerca stessa.

### **1. Titolare del Trattamento**

Il Titolare del Trattamento è l’Università Ca’ Foscari Venezia con sede legale in Dorsoduro 3246, 30123 Venezia, rappresentata dal Magnifico Rettore *pro tempore*.

### **2. Responsabile della Protezione dei Dati**

L’Università Ca’ Foscari ha nominato il “Responsabile della Protezione dei Dati”, che può essere contattato scrivendo all’indirizzo di posta elettronica [dpo@unive.it](mailto:dpo@unive.it) o al seguente indirizzo: Università Ca’ Foscari Venezia, Responsabile della Protezione dei Dati, Dorsoduro 3246, 30123 Venezia (VE).

### **3. Categorie di Dati Personali, Finalità e Base Giuridica**

Il trattamento ha ad oggetto i seguenti dati personali: dati anagrafici, dati di contatto, background linguistico e livello educativo del partecipante.

I predetti dati saranno raccolti attraverso un questionario somministrato tramite l’utilizzo della piattaforma Qualtrics.com.

Il trattamento dei dati personali verrà effettuato con strumenti cartacei ed informatici, adottando misure tecniche e organizzative adeguate a proteggerli da accessi non autorizzati o illeciti, dalla distruzione, dalla perdita di integrità e riservatezza, anche accidentali.

Per la tutela della riservatezza dei partecipanti, i dati verranno successivamente privati dei riferimenti direttamente identificativi (ad es. nome e cognome, codice fiscale, etc.), in modo che non siano più immediatamente riconducibili al soggetto a cui si riferiscono, e analizzati ai soli fini della realizzazione del suddetto progetto.

Le attività di ricerca sono svolte nell'ambito dell'esecuzione delle finalità istituzionali di ricerca scientifica dell'Ateneo, pertanto la base giuridica è rappresentata dall'art. 6.1.e) del Regolamento ("esecuzione di un compito di interesse pubblico") e, con riferimento ai dati particolari, dall'art. 9.2.a) del Regolamento ("consenso esplicito dell'interessato"). Le verrà, pertanto, richiesto di esprimere il suo consenso alla raccolta e all'utilizzo dei predetti dati in calce al presente documento. Lei potrà revocare il suo consenso in qualsiasi momento senza subire alcun pregiudizio.

È possibile opporsi al predetto trattamento in qualsiasi momento, scrivendo al Responsabile della Protezione dei Dati personali ai recapiti sopra indicati. L'Ateneo si asterrà dal trattare ulteriormente i predetti dati personali salvo sussistano motivi cogenti che legittimino la prosecuzione dello stesso.

#### **4. Tempi di Conservazione**

I dati saranno conservati per la durata del progetto e successivamente per 5 anni. Potrebbero essere utilizzati per ulteriori progetti di ricerca.

#### **5. Destinatari e Categorie di Destinatari dei Dati Personali**

I dati raccolti saranno trattati dai ricercatori dell'Università e dai ricercatori impegnati nel progetto, che agiscono sulla base di specifiche istruzioni fornite in ordine alle finalità e modalità del trattamento medesimo, nonché da soggetti che forniscono servizi ausiliari all'Università nominati 'responsabili del trattamento'. La lista aggiornata dei responsabili del trattamento è disponibile alla pagina: <https://www.unive.it/pag/34666/>.

I dati, in forma aggregata ed anonima (in modo da non renderla identificabile), potranno inoltre essere comunicati ad altre Università o enti per lo svolgimento delle attività di ricerca e diffusi per attività di disseminazione dei risultati (ad es. in pubblicazioni, rapporti di ricerca, banche dati nonché citazioni durante lezioni, seminari e convegni). Potranno altresì esaminare tutta la documentazione (comprensiva dei dati identificativi dei partecipanti) raccolta nell'ambito del progetto sia organismi nazionali e internazionali sia comitati delle riviste scientifiche italiane e straniere al fine di controllare che la ricerca sia condotta correttamente e in conformità alle disposizioni vigenti, nonché eventuali auditor.

## 6. Diritti dell'Interessato e Modalità di Esercizio

Lei potrà esercitare nei confronti dell'Università Ca' Foscari tutti i diritti previsti dagli artt. 15 e ss. Del Regolamento; in particolare, potrà ottenere: l'accesso ai dati personali, la loro rettifica o integrazione, la cancellazione (c.d. "diritto all'oblio"), la limitazione e l'opposizione del trattamento. La richiesta potrà essere presentata, senza alcuna formalità, contattando direttamente il Principal Investigator [giulia.bencini@unive.it](mailto:giulia.bencini@unive.it) e/o il Responsabile della Protezione dei Dati all'indirizzo [dpo@unive.it](mailto:dpo@unive.it) ovvero inviando una comunicazione al seguente recapito: Università Ca' Foscari Venezia – Responsabile della Protezione dei dati, Dorsoduro 3246, 30123 Venezia. In alternativa, è possibile contattare l'Università, scrivendo a PEC [protocollo@pec.unive.it](mailto:protocollo@pec.unive.it).

Inoltre, se ritiene che i dati personali siano stati trattati in violazione a quanto disposto dal Regolamento, potrà fare reclamo al Garante per la Protezione dei Dati Personali o adire le opportune sedi giudiziarie.

### Contatti

Per qualsiasi domanda relativa alle procedure dello studio e per modificare/revocare il consenso alla partecipazione allo studio, ora o in futuro, può contattare:

- Supervisore della ricerca: Professoressa Giulia Bencini, tel. studio +39 041 234 7839, indirizzo email: [giulia.bencini@unive.it](mailto:giulia.bencini@unive.it)

- Ricercatore/responsabile della raccolta dati: Studentessa Ilaria Venagli, indirizzo email: [873770@stud.unive.it](mailto:873770@stud.unive.it)

-Eventuali altri recapiti: Staff BemboLab. Email: [bembolab@unive.it](mailto:bembolab@unive.it), Telefono: 041/2345738 - 041/2345748

### Consenso

Il/La sottoscritto/a dichiara:

*di aver letto con attenzione e compreso le informazioni contenute nel presente documento.*

*Dichiara di esprimere il proprio consenso a partecipare allo studio qui descritto e autorizzare i ricercatori a trattare, gestire ed archiviare tutti i dati personali con le modalità sopracitate.*

*Il consenso potrà essere modificato/revocato in qualsiasi momento.*

*Il/La ricercatore/trice invierà quanto prima una copia del modulo di consenso informato compilato.*

- Acconsento a partecipare allo studio e autorizzo il trattamento dei dati
- Non acconsento a partecipare allo studio e non autorizzo il trattamento dei dati

## **APPENDIX C: Norming phase materials**

Participants who took part in the norming phase of the present study were personally contacted through Whatsapp. They were privately sent a link to the questionnaire, which was run on Qualtrics. They were instructed as follows:

“Per questa prima fase dello studio, verrà chiesto ai partecipanti di valutare l'accettabilità di 24 frasi italiane con si-causativo.

ISTRUZIONI: Per ognuna delle frasi proposte nel questionario, attribuisce un punteggio da 1 (non accettabile in italiano) a 7 (perfettamente accettabile in italiano).

Per giudicare queste frasi, non è necessario concentrarsi sulla loro correttezza grammaticale bensì sulla probabilità che tu possa dirle in determinate circostanze.

Dunque, il giudizio deve essere dato sulla base della tua interpretazione personale della frase in qualità di parlante nativo.

RICORDA: Nel giudicare la frase, concentrati solo su questi aspetti: i) la frase è comprensibile anche se estrapolata dal contesto, ii) il significato è chiaro, iii) la direi in determinate circostanze.

NOTE:\*Accettabile: la frase è ben formulata, non noti alcuna difficoltà nel comprenderne il significato ed è comprensibile anche estrapolata dal contesto”.



## APPENDIX D: Experiment materials

### Filler items

- Il nuovo computer non funziona più
- I signori stanno giocando a carte
- Ci sono delle rose davanti alla porta
- La ragazza esce a cena con l'amica
- L'imputato nega di essere colpevole
- I gondolieri cantano durante il tour
- Un buon insegnante motiva i suoi allievi
- La mamma è al telefono con sua sorella
- I due uomini litigano per il parcheggio
- Le navi da crociera passano per Venezia
- I nuovi treni viaggiano ad alta velocità
- I tifosi sperano di incontrare il calciatore
- Nel cassetto ci sono le magliette colorate
- I dipendenti si lamentano con il capo
- C'è un ombrello vicino alla porta d'ingresso
- La macchina nuova è chiusa in garage
- Il governo è al lavoro sul nuovo decreto
- C'è una ragazza con i tacchi a spillo rossi
- Il giovane corre allegramente nel parco
- L'impiegato sta telefonando ai clienti
- Al Teatro alla Scala faranno il balletto
- Il rapper canterà al concerto in Duomo
- Molti italiani si trasferiscono all'estero
- L'aereo atterrerà in ritardo per maltempo
- Durante il weekend è prevista neve
- Il gattino sta bevendo dalla ciotola

- Prima degli esami tutti gli alunni studiano
- La mamma va a fare shopping con la figlia
- Le punture di zanzara prudono molto
- Andare in vacanza con gli amici è divertente
- I nuotatori riposano prima della gara
- Le educatrici hanno organizzato una festa
- I liceali hanno studiato tutta la notte
- I ragazzi stanno in spiaggia tutto il giorno
- Il cane gioca con il padrone in giardino
- Quella ragazza sta sognando a occhi aperti
- Nel parco acquatico ci sono nuovi scivoli
- Le pallavoliste sono pronte per la partita
- Venezia è una città molto romantica
- Gli sciatori appassionati amano l'inverno
- L'uomo ha scommesso su quel cavallo
- Il gallo canta alle 5 tutte le mattine
- Molti tedeschi vanno in vacanza al lago
- L'alunno è annoiato durante la lezione
- I gatti stanno sempre in giardino a dormire
- I calciatori corrono per novanta minuti
- Le temperature sono in forte calo
- I clienti sono rimasti molto soddisfatti
- Quella bambina è sempre molto allegra
- Allo zoo ci sono gli animali selvatici
- Il cane da guardia fa paura ai ladri
- Il pugile combatterà il prossimo sabato
- Quei nuovi quadri sono meravigliosi
- Il mondo del basket è rimasto sconvolto
- I nuovi palazzi di Milano sono molto alti
- Le sue barzellette non sono divertenti
- I corridori si allenano per la maratona
- L'allenatore esultava per la vittoria

- Molte aziende cercano giovani neolaureati
- Il Palazzo Ducale è molto imponente
- La campionessa del mondo ha vinto ancora
- La nave da crociera salperà tra poche ore
- Il Colosseo è un monumento affascinante
- Il volume della televisione è troppo alto
- I giocatori di rugby sono molto muscolosi
- Il nuovo film è candidato agli oscar
- In quel locale si incontrano molti VIP
- A fine serata i camerieri sono molto stanchi
- Il professore ha fiducia nelle sue alunne
- Bisogna rispettare l'ordinanza del sindaco
- Quel ragazzo è appassionato di musica
- L'avvocato difende l'imputato in tribunale

## Prime items

Condition	Prime	Target verb
<b>Item 1</b>		
Active	La tata lava il bambino nella vasca da bagno	dress
Passive	Il bambino viene lavato dalla tata nella vasca	
Causative passive	Il bambino si fa lavare dalla tata nella vasca	
<b>Item 2</b>		
Active	Il papà aiuta il figlio per la verifica di storia	carry
Passive	Il figlio viene aiutato dal papà per la verifica	
Causative passive	Il figlio si fa aiutare dal papà per la verifica	

**Item 3**

Active	La maestra rimprovera l'alunno disobbediente di continuo	wake
Passive	L'alunno viene rimproverato dalla maestra di continuo	
Causative passive	L'alunno si fa rimproverare dalla maestra di continuo	

**Item 4**

Active	La receptionist registra gli ospiti nella hall dell'albergo	arrest
Passive	Gli ospiti vengono registrati dalla receptionist nella hall	
Causative passive	Gli ospiti si fanno registrare dalla receptionist nella hall	

**Item 5**

Active	L'estetista trucca l'attore per l'esibizione teatrale	cuddle
Passive	L'attore viene truccato dall'estetista per l'esibizione	
Causative passive	L'attore si fa truccare dall'estetista per l'esibizione	

**Item 6**

Active	Il papà orgoglioso bacia la figlia sulla fronte	follow
Passive	La figlia viene baciata dal papà sulla fronte	
Causative passive	La figlia si fa baciare dal papà sulla fronte	

**Item 7**

Active	L'aiutante cambia la ballerina per il saggio di danza	scratch
Passive	La ballerina viene cambiata dall'aiutante per il saggio	
Causative passive	La ballerina si fa cambiare dall'aiutante per il saggio	

<b>Item 8</b>		
Active	La mamma porta il figlio a scuola ogni giorno	push
Passive	Il figlio viene portato a scuola dalla mamma	
Causative passive	Il figlio si fa portare a scuola dalla mamma	
<b>Item 9</b>		
Active	L'estetista depila la cliente con il laser ogni mese	stop
Passive	La cliente viene depilata dall'estetista con il laser	
Causative passive	La cliente si fa depilare dall'estetista con il laser	
<b>Item 10</b>		
Active	La psicologa contatta il paziente per la visita mensile	kiss
Passive	Il paziente viene contattato dalla psicologa per la visita	
Causative passive	Il paziente si fa contattare dalla psicologa per la visita	
<b>Item 11</b>		
Active	Il papà insegue il figlio per il giardino di casa	comb
Passive	Il figlio viene inseguito dal papà per il giardino	
Causative passive	Il figlio si fa inseguire dal papà per il giardino	
<b>Item 12</b>		
Active	La taxista accompagna i viaggiatori in aeroporto per la partenza	scratch
Passive	I viaggiatori vengono accompagnati dalla taxista in aeroporto	
Causative passive	I viaggiatori si fanno accompagnare dalla taxista in aeroporto	

<b>Item 13</b>		
Active	La nonna coccola il nipotino sulla poltrona in salotto	push
Passive	Il nipotino viene coccolato dalla nonna sulla poltrona	
Causative passive	Il nipotino si fa coccolare dalla nonna sulla poltrona	
<b>Item 14</b>		
Active	Il nonno abbraccia la nipote neolaureata con affetto	hit
Passive	La nipotina viene abbracciata dal nonno con affetto	
Causative passive	La nipotina si fa abbracciare dal nonno con affetto	
<b>Item 15</b>		
Active	La dottoressa cura il paziente con un nuovo farmaco sperimentale	arrest
Passive	Il paziente viene curato dalla dottoressa con un nuovo farmaco	
Causative passive	Il paziente si fa curare dalla dottoressa con un nuovo farmaco	
<b>Item 16</b>		
Active	Lo stilista veste la modella per la sfilata di moda	kiss
Passive	La modella viene vestita dallo stilista per la sfilata	
Causative passive	La modella si fa vestire dallo stilista per la sfilata	
<b>Item 17</b>		
Active	La zia ospita il nipote per tutta l'estate	cuddle
Passive	Il nipote viene ospitato dalla zia per l'estate	
Causative passive	Il nipote si fa ospitare dalla zia per l'estate	

**Item 18**

Active	La personal trainer allena l'atleta per la gara di powerlifting	hit
Passive	L'atleta viene allenato dalla personal trainer per la gara	
Causative passive	L'atleta si fa allenare dalla personal trainer per la gara	

**Item 19**

Active	Il parrucchiere pettina lo sposo per il matrimonio	dress
Passive	Lo sposo viene pettinato dal parrucchiere per il matrimonio	
Causative passive	Lo sposo si fa pettinare dal parrucchiere per il matrimonio	

**Item 20**

Active	L'infermiere medica il ferito con garze e cerotti	wake
Passive	Il ferito viene medicato dall'infermiere con delle garze	
Causative passive	Il ferito si fa medicare dall'infermiere con delle garze	

**Item 21**

Active	L'insegnante convince gli studenti a partecipare al concorso	comb
Passive	Gli studenti vengono convinti dall'insegnante a partecipare	
Causative passive	Gli studenti si fanno convincere dall'insegnante a partecipare	

**Item 22**

Active	Il fratello accarezza la sorellina neonata sulla guancia	stop
Passive	La sorellina viene accarezzata dal fratello sulla guancia	
Causative passive	La sorellina si fa accarezzare dal fratello sulla guancia	

**Item 23**

Active            La mamma disperata cerca il bambino per tutta la casa            carry

Passive            Il bambino viene cercato dalla mamma per tutta la casa

Causative  
passive            Il bambino si fa cercare dalla mamma per tutta la casa

**Item 24**

Active            L'artista tatua il cliente su tutta la schiena            follow

Passive            Il cliente viene tatuato dall'artista sulla schiena

Causative  
passive            Il cliente si fa tatuare dall'artista sulla schiena

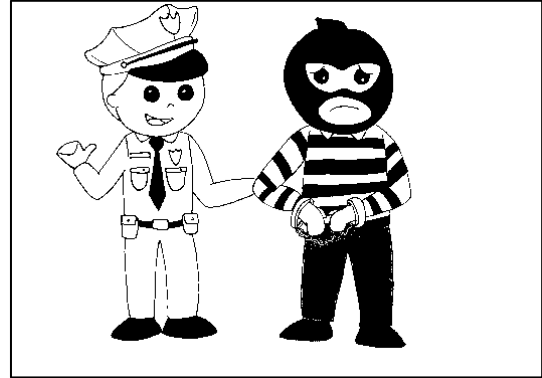
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## Target images



Item 1. *Servant dresses king*



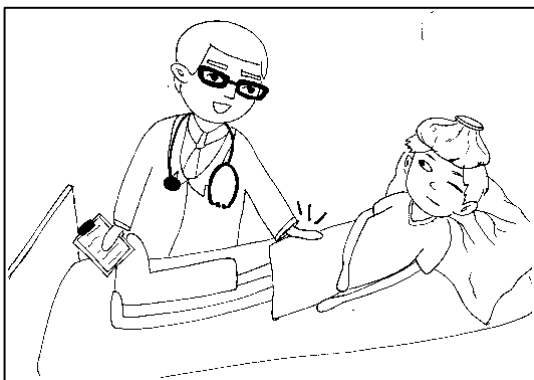
Item 4. *Police officer arrests thief*



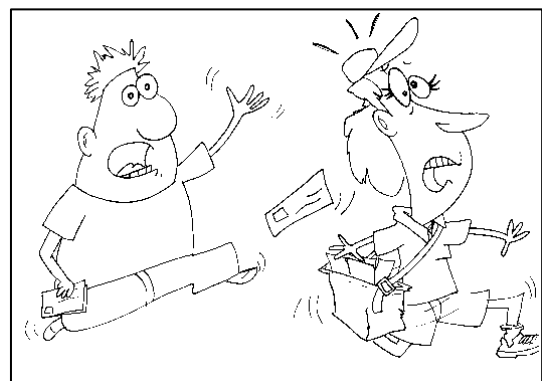
Item 2. *Groom carries bride*



Item 5. *Nurse cuddles newborn*



Item 3. *Doctor wakes patient*



Item 6. *Man follows mail carrier*



Item 7. *Baby scratches mother*



Item 10. *Queen kisses poor man*



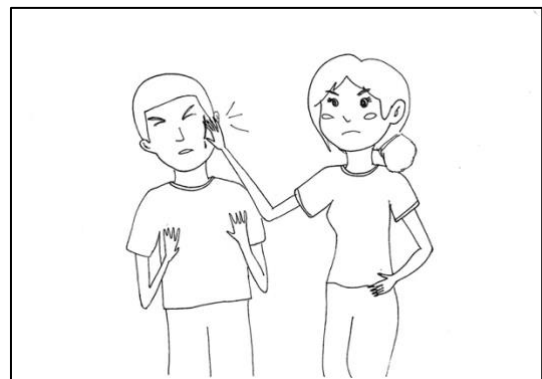
Item 8. *Boy pushes girl*



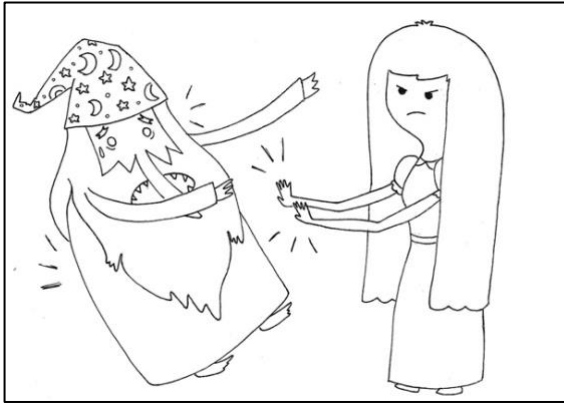
Item 11. *Hairdresser combs client*



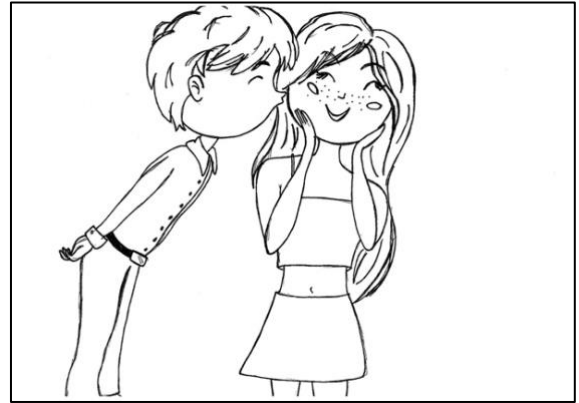
Item 9. *Referee stops footballer*



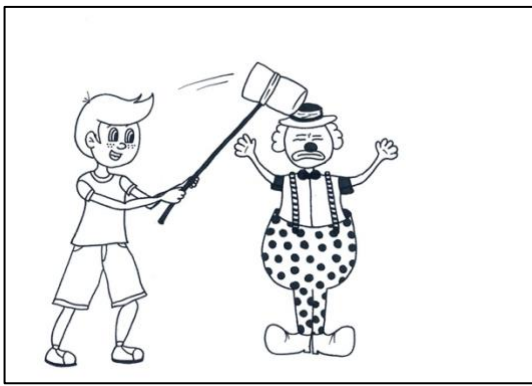
Item 12. *Girl scratches boy*



Item 13. *Girl pushes magician*



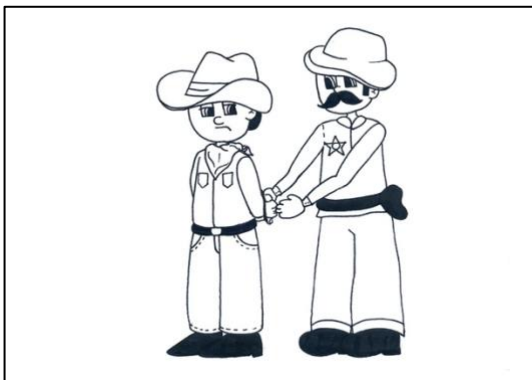
Item 16. *Man kisses woman*



Item 14. *Boy hits clown*



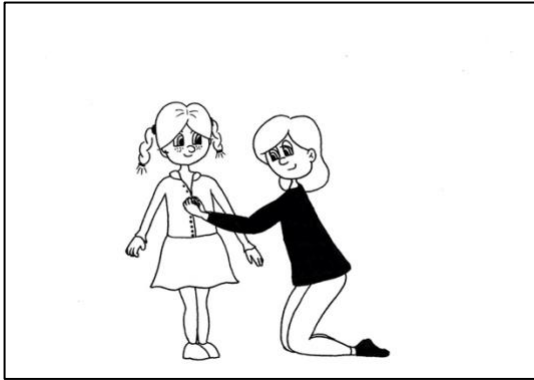
Item 17. *Grandmother cuddles boy*



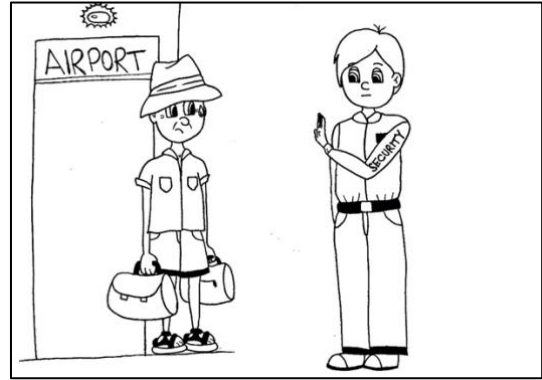
Item 15. *Sheriff arrests cowboy*



Item 18. *Woman hits man*



Item 19. *Mother dresses girl*



Item 22. *Security guard stops tourist*



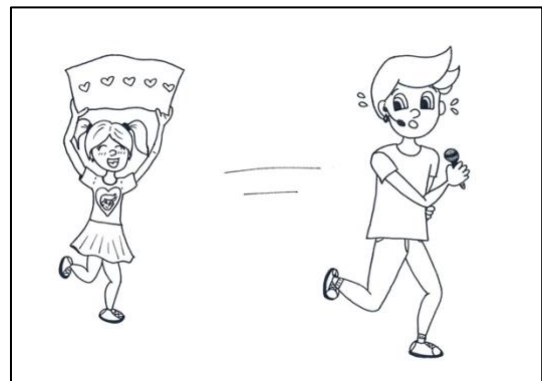
Item 20. *Man wakes woman*



Item 23. *Father carries boy*



Item 21. *Fairy combs princess*



Item 24. *Fan follows singer*

## Welcome screen



Before the experiment started, a recorded voice presented participants with the following instructions, which were also shown on the screen:

Gentile partecipante, prima di cominciare l'esperimento, ascolta attentamente alcune semplici istruzioni.

Durante l'esperimento, ti verranno presentate delle frasi. Leggi e ricopiale in italiano, usando la tastiera del tuo computer. Successivamente, ti verrà presentata un'immagine sotto la quale ti verrà suggerito un verbo. Descrivi l'immagine in inglese, usando il verbo suggerito e coniugato. Puoi descriverla con la frase che ritieni più appropriata – è importante che la frase venga scritta per intero. Se possibile, evita di usare i pronomi.

## Instruction screen (1)



Subsequently, they were instructed on how to use the keyboard during the trial:

Alcune informazioni per l'utilizzo della tastiera e dei caratteri.

Non è possibile usare i caratteri accentati – per farlo, usa l'apostrofo. Altrimenti, utilizza le lettere non accentate.

Non è necessario usare le maiuscole – se desideri usarle, premi shift + lettera.

Inoltre, la funzione cancella non sarà attiva nella slide di descrizione dell'immagine.

Se desideri correggere quanto scritto, puoi schiacciare cancella ma verrà eliminata l'intera frase. Pertanto, sarà necessario riscriverla da capo.

## Instruction screen (2)

Caratteri:

- Non è possibile usare i caratteri accentati. Puoi usare le lettere non accentate, oppure l'apostrofo.
- Non è necessario usare le maiuscole. Per farlo, premi SHIFT+Lettera

Attenzione:

- Durante la descrizione dell'immagine, la funzione "cancella" non è attiva. Se desideri correggerti, puoi schiacciare backspace ma verrà eliminata l'intera frase e sarà necessario riscriverla.

\*Premi INVIO per continuare\*

## Example screen

La ragazza sta ascoltando la musica

Disegna il Paese usando le lettere del tuo computer

.....

La ragazza sta ascoltando la musica

\*Premi INVIO per registrare la risposta e continuare\*



pat

Disegna l'immagine in inglese usando il mouse suggerito.

.....

Here you need to describe the picture in English

\*Premi INVIO per registrare la risposta e continuare\*

Ecco un esempio delle frasi e delle immagini che vedrai.

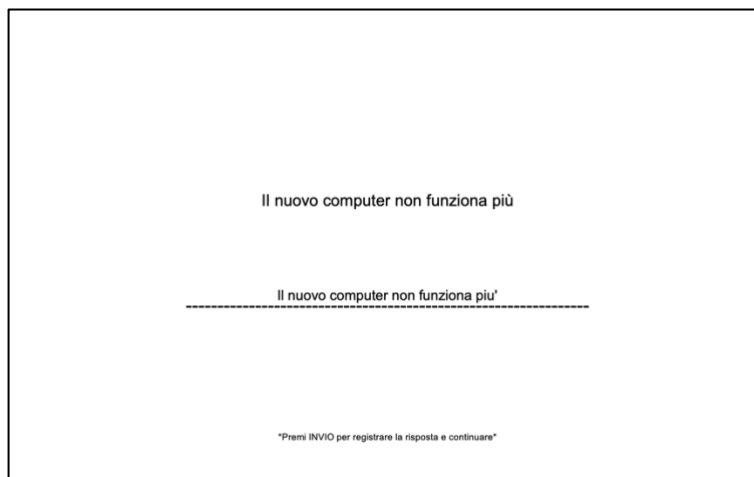
**PROVA TU NELLE PROSSIME SLIDE!**

\*Premi FRECCIA DESTRA per provare\*

## Begin experiment screen



## Filler screen: read and copy the sentence in Italian





## Prime screen: read and copy the sentence in Italian

La tata lava il bambino nella vasca da bagno

-----

La tata lava il bambino nella vasca da bagno

\*Premi INVIO per registrare la risposta e continuare\*

## Picture description screen



dress

-----

The servant is dressing the king

\*Premi INVIO per registrare la risposta e continuare\*

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