

## Brazilian Portuguese-English bilingualism does not affect metalinguistic awareness of L1 constraints in two argument structure constructions

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### Abstract

In the present study we investigated a corollary of the multicompetence hypothesis as a description of language representation in bilingualism. According to this hypothesis, bilingualism entails a state of linguistic knowledge that does not correspond either to L1 or L2 norms. Previous studies examining online language processing of sentences in Portuguese that simulated argument structures constructions of English have shown a departure from the restrictions of the L1 grammar (Portuguese), which supports the multicompetence hypothesis. The purpose of this study was to explore whether such departure from the L1 would be observed in a psycholinguistic task that taps bilinguals' intentional attention focus on the form of linguistic expressions in their L1, therefore depicting L1 metalinguistic awareness. The results reveal that the bilingualism effects detected during real time sentence processing do not extend to metalinguistic awareness, therefore suggesting that such effects are evanescent, and most likely implicit in nature.

**Keywords:** Induced Movement Alternation; Dative Alternation; Bilingualism; Metalinguistic Awareness; Speeded Acceptability Judgment

### 1. Introduction<sup>1</sup>

As argued by Grosjean (2013), far from being an exceptional state of affairs, bilingualism seems to be the norm all over the world. This is especially true if one considers contact between English and languages other than English. Aside from its role in science, technology and foreign trade, there's evidence that the spread of English through media has impacts on its strengthening as a common fluently spoken second language at least in some regions of the world (Berns et al., 2007). This

present study aims at contributing to the understanding of the psycholinguistic processes that characterize Brazilian Portuguese-English bilinguals residing in Brazil. This is a bilingual population typically formed by late second language acquirers who intentionally seek opportunities to learn the second language, therefore possibly differing from bilingual populations formed by individuals who are circumstantially brought to language contact settings, some since early infancy.

The term bilingualism used to be regarded as referring exclusively to one kind of bilingual experience,

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namely simultaneous first language acquisition of two different languages (Grosjean, 2013). In this vein, it was often assumed that true bilinguals would necessarily achieve balanced high levels of proficiency in both of their languages. Nevertheless, still according to Grosjean (2013) such restrictive view has been challenged. It is now accepted that bilingualism refers to the experience of regular use of more than one language, and as languages have different functions and purposes at any given point in a person's life, it is now accepted that bilinguals usually achieve divergent and changeable skill levels in the languages they use (op. cit.). Furthermore, there is now growing acceptance that bilinguals tend to diverge from monolinguals of both their first and their second languages with respect to representation (competence) and processing (performance). As argued by Cook (1992, 2007), rather than expressing separate "competences" in two languages, the linguistic make-up of bilinguals should be better described as a state of multicompetence.

The multicompetence hypothesis predicts modified knowledge and processing of both L1 and L2, departing from both. Such modification is compatible with the point of view that the mental representations for the languages of bilinguals can become integrated at least in specific aspects and levels of linguistic organization (Li, 2013), therefore leading to continued access and some activation of an unintended language while the other is being processed. There is documented evidence Brazilian Portuguese-English bilinguals do depart from monolingual norms in the processing of certain argument structure constructions (Souza, 2012, 2014). Goldberg (1995) defines argument structure constructions as sentence patterns that entail the semantics of argument structures (roughly the "who does what to whom") somewhat independently of the lexical representation of sentential main verbs. There are differences in argument structure constructions across languages, and such differences can be a challenge for second language learners (White, 2003). The crosslinguistic difference in argument structure constructions can be exemplified in a comparison of the behavior of the English verb *drop* and the Portuguese verb *cair*. Whereas both languages license those verbs

in intransitive constructions like *Tears dropped from his eyes/Lágrimas caíram de seus olhos*, only English also licenses the verb in a transitive construction: *He dropped his cup/\*Ele caiu sua xícara*.

In studies that examined performance in the native language (Portuguese), Brazilian Portuguese-English bilinguals of high L2 proficiency have been demonstrated to perform tasks tapping the cost of online processing of argument structure constructions anomalous in their L1 but licensed in their L2 in ways that suggest some degree of similarity to the behavior among English L1 speakers (Souza, 2012; Souza, 2014; Fernández & Souza, 2016). A question that derives from these findings is whether such apparent departure from L1 restrictions during online processing is supported by a momentary co-activation of representations linked to knowledge of the L2, or whether it is a reflection of changes in the overall L1 grammar.

In the present study we explored the extent to which the departure from the L1 and L1-related restrictions observed in previous studies of bilinguals during the online sentence processing would also imply a modified metalinguistic perception of what is licensed in the bilinguals' L1. In other words, our research question was whether or not the representational integration across languages predicted by the multicompetence hypothesis would resist a task that allows participants to intentionally focus attention on linguistic expression – the acceptability judgment task. The ultimate focus of the study we now report was on the duration of shared access to more than one grammatical representation suggested by previous studies. We sought to verify if the attested departures from monolingual norms remain observable beyond the fraction of second time window featured in online processing studies. Investigations of such temporal windows have consequences for the understanding of how bilinguals manage and control language choice, which we understand to be an important facet of the psycholinguistics of bilingualism.

In the next section of this paper we discuss the multicompetence hypothesis and its exploration with Brazilian Portuguese-English bilinguals' processing of argument structure constructions. We then continue

with discussions of the notion of metalinguistic awareness and its detection through the acceptability judgment task, as well as of the description of two argument structure constructions with different degrees of overlap in English and in Portuguese. Afterwards we report the methods we employed to answer our present research question, and we report and discuss the results yielded by our experimental procedure. In the conclusion we make considerations about the significance of our findings and the future directions we envisage.

## **2. Multicompetence: Evidence from bilingual language processing studies.**

Cook (1991) defines multicompetence as “the compound state of a mind with two grammars”. We believe that at a first glance the notion of multicompetence may not seem to bring much new to Selinker’s (1972) interlanguage hypothesis. The interlanguage hypothesis can be interpreted as a theory of the independence of L2 grammar representations from both the L2 learner’s L1 and the primary L2 data he or she is exposed to. From the viewpoint of the interlanguage hypothesis, a bilingual is regarded as possessing a stable L1 grammar that usually converges with the norm of a given community of other speakers of the L1, added by representations for the L2 grammar of highly variable stability, and which may diverge significantly from the norm of native speakers of the L2. The major theoretical innovation put forward by reference to the compound linguistic state of mind of bilinguals as multicompetence is the hypothesis that bilinguals and multilinguals possess a unique linguistic make-up deriving from their experiences as regular users of more than one language. This implies that the bilingual experience is a situation that leads speakers’ grammar representations to have properties of their own, thus not necessarily in full convergence with any monolingual norm, either the L1 or the L2 (Cook, 2007).

The multicompetence hypothesis overlaps with contemporary perspectives on bilingualism that emphasize that the bilinguals’ language representation and processing cannot be regarded as simply a varying degree of monolingual competence. From a theoretical perspective, it is compatible with the tenets of the

multiple grammars hypothesis (Amaral & Roeper, 2014), according to which the human language faculty is by default capable of accommodating and adapting to different, sometimes contradictory grammars, thus being sufficiently malleable to allow unique representations to emerge from unique trajectories of language usage. The intense language contact afforded by most bilingual experiences is certainly a type of such unique trajectories. It is also compatible with a growing body of evidence from experimental studies that suggest systematic cross-linguistic activation over language comprehension and language production tasks. This evidence indicates that bilinguals are continuously managing a dual access to linguistic representations from both of their languages even when explicitly aimed at processing only one of them. There are currently reports of findings that support this view of cross-linguistic integration during processing at all levels of language organization, from phonological categorization to sentence processing strategies (see Li (2013) for a review).

However, the vast majority of such experimental evidence is based on studies whose participants were bilinguals whose profiles featured lengthy periods of immersion in L2 settings such as universities (e.g.: Dussias & Sagarra, 2007). In other words, the relevant evidence is mostly based on pools of participants that may be characterized as moving towards a balance between L1 and L2 dominance, at least in a number of contexts of their linguistic experiences. This state of things leads to questions about whether or not the cross-linguistic integration that supports the conceptualization of bilingualism as multicompetence is generalizable to other language contact scenarios and bilingual profiles.

One possible alternative scenario is the situation of learners of English residing in Brazil. They constitute a bilingual population whose overall language dominance is likely to be attached to Brazilian Portuguese, for the obvious reason that this is the language by way of which most of the communication in their immediate sociocultural environment will take place. It is true that many learners of English L2 may get engaged in intense use of English because of access to and the presence of

English through media channels. However, the extent to which those linguistic engagements translate into a change of dominance pattern from L1 to L2, or even the extent to which they truly affect the state of L2 representations, are still open empirical questions.

Notwithstanding, as showed below there are studies that report a departure from what would be expected from the L1 in the language processing of Brazilian Portuguese-English bilinguals. These are studies that feature bilingual participants with high levels of proficiency in their L2, but who nevertheless might be generally characterized as L1-dominant.

Souza (2012) reports a self-paced reading task in which the target sentences instantiated an argument structure construction that is licensed in English, but not in Portuguese. Two sets of stimuli were employed, one of them in English, and the other in Portuguese. The latter presented readers with critical sentences that forced the English construction into Portuguese. Five groups of nine participants each were recruited. Such groups differed in linguistic profile: a group of monolingual speakers of Brazilian Portuguese, a group of monolingual speakers of American English, a group of Brazilian Portuguese-English bilinguals with low L2 proficiency, and two groups of Brazilian Portuguese-English bilinguals with high L2 proficiency. The monolinguals of Brazilian Portuguese and one of the groups of Brazilian Portuguese-English bilinguals with high L2 proficiency read the Portuguese language version of the stimuli. The three other groups read the English language version. All bilingual participants lived in Brazil, which was also the country where the experiments took place.

As should be expected, Souza's (2012) results revealed that when compared with the L1 speakers of English, the monolinguals of Brazilian Portuguese demonstrated a significantly higher processing cost when reading the sentences that forced the English-only argument structure construction into their language. Such processing cost was equivalent to what was demonstrated by the low L2 proficiency Brazilian Portuguese-English bilinguals, who read the English language stimuli set. Thus, the low L2 proficiency group may be said to maintain the processing pattern

of monolinguals of Brazilian Portuguese. On the other hand, the high L2 proficiency bilingual group who read the English language sentences was not different from the group formed by monolinguals of American English, attesting for the learnability of the English-only argument structure construction. The most interesting observation, however, came from the high L2 proficiency bilingual group who read the Portuguese language stimuli. This group processed the sentences that forced the English construction into Portuguese with no extra cost, making them comparable to the American English monolinguals and the high L2 proficiency bilinguals who read in English. This clearly indicates a departure from the L1 norm by the bilingual participants of Souza's (2012) study during online processing in their mother tongue, probably resulting from their bilingualism. This observation is fully compatible with the corollaries of the multicompetence hypothesis.

Comparable bilingualism effects have been reported in a study based on a production task. Souza (2014) relied on the same English-only argument structure construction in order to probe readers' difficulty in an oral recall experiment. In this study, participants had to quickly read sentences in their L1s, and subsequently repeat the sentences out loud from memory. The critical items of Souza's (2014) study were sentences that contained an argument structure pattern that is shared by both Portuguese and English, sentences with the English-only construction, and sentences that contained argument structure violations in both Portuguese and English. The study design was the hypothesis that successful sentence recall is not triggered by verbatim memorization of strings of lexical items, but rather by a full-fledged reconstruction of sentence structure in working memory, from conceptualization to grammatical encoding. So the key assumption in this study was that when facing a task in which oral sentence recall is at stake, individuals who failed to access grammatical representations that support language encoding would experience more difficulty when reconstructing sentences in working memory. Following the results reported in Souza (2012), this would be the case of low L2 proficiency bilinguals when trying to recall both the argument

structure construction licensed only in English and the sentences containing violations in both languages.

In Souza (2014) difficulty of recall was operationalized as instances of disfluency, specifically episodes of pauses higher than 200 milliseconds during oral reproduction of sentences. Three groups of participants were observed: monolinguals of American English, low L2 proficiency Brazilian Portuguese-English bilinguals and high L2 proficiency Brazilian Portuguese-English bilinguals. Although all participants were recruited in the USA, none of the bilingual participants were immersed in English to the point of being in the process of L1 dominance inversion. All participants' oral recalls were recorded. Analysis of the recordings (in the participants' respective L1s) revealed that both the monolinguals of English and high L2 proficiency bilinguals experienced more recollection difficulties related to the argument structure violation in both Portuguese and English. Contrastively, the low proficiency bilinguals experienced difficulties related to both the structure unlicensed in both languages and the English-only construction. In other words, the results of this oral production study suggest that the high L2 proficiency bilinguals were accessing an L2 grammatical representation while encoding sentences in their L1. This observation also supports the tenets of the multicompetence hypothesis.

The main question that motivates the present study is whether the observations reported in Souza (2012) and Souza (2014) in experimental work involving online language processing describe a state of cross-linguistic integration durable enough to affect the more stable representation of L1 grammar. According to Bialystok (2001), it is such stable representation or knowledge repository that supports metalinguistic awareness. The following section is devoted to some exploration of this construct, as well as to a task through which it can be detected.

### **3. Metalinguistic awareness and its measurement through acceptability judgments.**

As discussed by Bialystok (2001), the term of metalinguistic awareness has wide and varied used in

different domains, with consequent slight variations on the meanings it serves to feature. These domains include psychology, education, linguistics and psycholinguistics. In the present discussion, we follow Bialystok (2001) in defining metalinguistic awareness as a momentary focus of attention on linguistic objects and representations. It is a manifestation of what Cazden (1974, apud Bialystok 2001, pp. 121-122) described as the ability to attend to linguistic forms, which is not as universally acquired by L1 speakers as the ability to actually use language in communication (i.e.: listening and speaking), therefore depending on development of cognitive traits other than the ones involved in overall first language acquisition.

Bialystok (2001) argues that metalinguistic awareness may play a significant role in L2 acquisition, as it predisposes learners' expectations to features that they will need to attend to in order to build L2 representations. Metalinguistic awareness has also been proposed as playing a role in differential early literacy achievement (Bialystok, 2001). Also, it has been argued that bilingual children have an advantage over monolingual children in tasks that measure metalinguistic awareness (Cook, 1992, Bialystok & Barac, 2013).

The acceptability judgment task is in which participants are asked to make decisions about the well-formedness, or acceptability, of linguistic stimuli. Such judgments may be binary – as when either “good” or “bad” responses are elicited – or scalar, in which case some variation of Likert-type scales are employed for responses. Elicitation of sentence acceptability is a procedure by way of which metalinguistic awareness can be measured (Bialystok & Barac, 2013). In L2 research, Ellis (2005) argues that a version of the acceptability judgment task in which temporal ceilings are given for judgment call to be made – the speeded acceptability judgment task (SAJ) – is a psychometric procedure that taps implicit knowledge of language. This view has been further developed by Gutiérrez (2013), who argues that SAJs probe two distinct factors, depending on the grammaticality status of the stimuli. According to the author, judgment calls for grammatical stimuli tap implicit linguistic knowledge, whereas judgments elicited by ungrammatical stimuli tap explicit linguistic

knowledge. Whether or not SAJs compose tap implicit linguistic knowledge is not a fully resolved issue (Isemonger, 2007; Ellis & Lowen, 2007; Kachinske & Vafae, 2014). However, for the purposes of the present discussion it is sufficient to consider that the elicitation of acceptability judgments relies on metalinguistic awareness, or the capacity to intentionally focus attention on language form (Bialystok & Barac, 2013), irrespective of whether the knowledge repositories that support such attentional focus are stored as explicit or implicit representations.

SAJs have been demonstrated to yield reliable information concerning overall L2 proficiency. Souza and Soares-Silva (2015) reported a correlational study validating a vocabulary size measure as an apparatus for predicting access to grammatical representations among Brazilian Portuguese-English college-level bilinguals (n=30). The authors administered a timed-version of the paper-based Vocabulary Levels Test (Nation, 1990) in association with an overall proficiency diagnostic test (the Oxford Placement Test). Results revealed two distinct groups of L2 proficiency, referred to by the authors as “high proficiency” (those who successfully completed the VLT highest level (n=12)), and “low proficiency” (those who did not complete the VLT first levels (n=18)). Afterwards, both groups participated in a SAJ task in which they had to make judgment calls through a Likert scale ranging from 1 (totally unacceptable) to 5 (totally acceptable) within no longer than 6 seconds per sentence. This time ceiling was suggested as an approximation of online processing, and it was established after Souza et al. (2015), in which the time for both English and Brazilian Portuguese native speakers’ judgment calls was established as about 3.5 seconds. The set of stimuli in the SAJ was composed by 56 sentences in English, among which 16 contained grammatical violations related to morphosyntax and argument structure realization.

Results of the Souza and Soares-Silva’s (2015) study revealed that low-proficient bilinguals were not able to distinguish grammatically licit sentences from illicit sentences. This was the case even when the ungrammaticality was shared by the participants’ L1 and L2. Souza and Soares-Silva interpret the results as showing that the low proficiency sample of their study

were not reliably accessing grammatical representations under time pressure, which leads the authors to conclude that data concerning L2 metalinguistic awareness elicited through SAJs are reliable measures of L2 proficiency, especially if this construct is understood to encompass automaticity of access to repositories of grammatical knowledge.

As stated above, the focus of the present study was to identify whether the results reported in Souza (2012) and Souza (2014) would span beyond observations of online processing, therefore reaching a level at which modified impressions about what is licit in the L1 would ensue. Oliveira’s (2013) study of L2 acquisition of the English resultative construction (e.g.: *John hammered the nail flat*) reports data that suggests that an untimed acceptability judgment task did yield higher rates of acceptance of this English-only construction when it was simulated in Portuguese from high L2 proficiency Brazilian Portuguese-English bilinguals. However, the effect sizes reported by Oliveira are rather small. This fact together with the surface form overlap between the English resultative construction and Portuguese adjectival object modification structures led us to question the generalizability of Oliveira’s (2013) findings to other construction types and to the acceptability judgment task as a whole.

Thus, in order to clarify those issues we designed the present study, which focused on two argument structure constructions for which varying degrees of contrast are obtained when English and Brazilian Portuguese are compared. We now pass over to the descriptions of such constructions and the meanings they express.

#### **4. Two argument structure constructions in contrast between Brazilian Portuguese and English.**

In this section we will describe two argument structure constructions that stand in contrast between English and Brazilian Portuguese. The first argument structure construction expresses induced, or caused movement, and it is construed in a syntactic pattern that is licensed only in English. This is the argument structure construction that was focused on the studies

reported in Souza (2012) and Souza (2014). The second expresses change of possession, and its overt syntactic realization is in partial overlap in the grammars of English and Portuguese.

#### 4.1- *The expression of induced movement.*

In English, induced or caused motion can be linguistically construed by sentences with manner of motion verbs (run, walk, jump, march, etc) as the single main transitive verb of a sentence. Therefore, these otherwise intransitive verbs can participate in a transitive construction. This fact has led the construction to be labeled as a type of “causative alternation” (Levin, 1993, among others), as the resulting sentence pattern may be analyzed as a derivation from the intransitive, monoargumental pattern in which manner of motion verbs also participate.<sup>2</sup> Causative alternations entail readings composed of two sub-events (the cause sub-event and the action sub-event), and two entities (the causer and the causee). The causative alternation construction that expresses induced or caused motion in English is referred to be Levin (1993) as the induced movement alternation.

Levin (1993) states that English distinguishes “two major subtypes of causative alternation: Causative/inchoative alternation (in which verbs whose meaning depict change of state or change of possession usually participate), and the induced movement alternation (in which verbs of manner of motion usually participate)” (p.27). Example (1a) illustrates the causative inchoative alternation, with the change-of-state verb *break*. The idea of “alternation” is brought about by the fact that the same verb may also participate in an intransitive, or monoargumental sentence pattern (1b).

1. a- John broke the vase.
- b- The vase broke.

As argued by Levin (1993) and Goldberg (1995) not all verbs that may be classified as belonging to a certain family with respect to core semantic features (e.g.: change-of-state verbs, manner-of-motion verbs, etc) will necessarily participate in causative

alternations, or any argument structure construction. Therefore, part of the linguistic knowledge of speakers encompasses knowledge of the licensing and the constraints of participation of specific verbs in specific argument structure constructions. Of course much – if not most – of this knowledge is implicit, and therefore not conscious, to most speakers. Among native (and at least some non-native) speakers of English, such knowledge is exemplified by their knowledge that verbs of appearance, disappearance and occurrence will only participate in intransitive and non-causative monoargumental constructions, such as illustrated by the contrast in grammaticality between 2(a) and 2(b) below (Levin, 1993):

2. a- A dove appeared from the magician’s sleeve.
- b- \*The magician appeared a dove from his sleeve.

The induced movement alternation is “found primarily with a subset of the run verbs [as] it differs from the causative/inchoative in that the causee is typically an animate volitional entity that is induce to act by the causer” (Levin, 1993, p. 31). Thus, the causer leads the causee to move, and the construction usually entails a scene in which the causer co-participates in the action. Sentence (3) is an instance of the induced movement alternation, and it entails a reading in which the external argument *the coach* induces the agentive object *the students* to run.

3. The coach ran the students around the field.

English has induced movement alternation causative as well. According to Bittencourt (2001), the grammar of Brazilian Portuguese is similar to the grammar of English with respect to the fact that both languages support the expression of causative meanings by analytical or synthetic constructional configurations. In analytical causative constructions, the causative meaning is realized by two clauses, the first one with a light verb as main predicator and depicting causation. On the other hand, in synthetic configurations the causative meaning is realized by a single clause, in such a way that the only main verb lexicalizes both

the causation and the action sub-events. According to Bittencourt (2001), in Portuguese, unlike English, only change of state verbs (which express changes of physical, emotional or mental states) are licensed in synthetic configurations. Therefore, manner-of-motion verbs in causative readings will only be licensed in constructions with analytical configuration in Portuguese. This description is supported by the experimental evidence reported in Souza et al. (2015), as according to the authors native speakers of English are capable of detecting the ungrammaticality of sentences that simulated a synthetic induced movement expression in Portuguese (such as X below) in a speeded acceptability judgment task in which judgment calls are made in less than four seconds. The contrast between English and Portuguese is illustrated by sentences in (4) below.<sup>3</sup>

4. a- The general made the prisoners march to the new camp.  
 b- O general fez os prisioneiros marcharem ao novo acampamento.  
 c- The general marched the prisoners to the new camp.  
 d- \*O general marchou os prisioneiros ao novo acampamento.  
 e- The chef burned the cake.  
 f- A chef queimou o bolo.

#### 4.2- *The expression of transfer of possession:*

As stated above, the syntactic realization of the concept of transfer of possession is in partial overlap in the grammars of English and Portuguese when such realization is wrought by the ditransitive construction. The ditransitive construction involves the overt realization of three arguments expressed as noun phrases (NPs). The first argument is typically read as an agent, whereas the two internal (post-verb) arguments alternate in the roles of theme (entity being transferred) and recipient/beneficiary.

The grammar of native (and at least some non-native) speakers of English allows two distributions of objects in double object constructions, according to Zara et al. (2013) and Zara (2014). The recipient or

beneficiary may be realized by an NP that complements a preposition, in other words, that is the complement in a prepositional phrase (PP), therefore being an indirect object, whereas the theme is realized as a direct object complementing the main verb. This is illustrated in sentence 5(a) below. Alternatively, the recipient or beneficiary NP may be realized as the first of two complements of the main verb, in which case this NP may be referred to as a dativized indirect object, and the construction is also referred to as the dative alternation<sup>4</sup> (Goldberg, 1995). Sentence 5(b) exemplifies the English dative alternation.

5. a- Maggie wrote a long email to her father.  
 b- Maggie wrote her farther a long email.

The grammar of native (and at least some non-native) speakers of English constrains the dative alternation construction with specifications that license its occurrence. Such constraints have been described in the linguistic literature (Goldberg, 1995), and were specifically tested and testified by Zara's (2014) study based on corpus data. Some of the critical constraints are the following<sup>5</sup>:

- a. The dative alternation is employed with verbs that depict transfer of possession (concrete or metaphorical) between the external and internal arguments.
- b. The agent usually has the intention to transfer something to the recipient, but intentionality is not a semantic-pragmatic requirement. The subject can also unintentionally cause or transfer an effect over the recipient, as in *Mary gave me the flu*.
- c. The recipient/beneficiary noun in a dative alternation must have the semantic feature [+animate], so *Carl transferred the boxes to the file room* is grammatical, whereas *\*Carl transferred the file room the boxes* is not. We highlight the fact that when the referent of the indirect object is [-animate], such as in *the file room*, the reading of transfer of possession is highly questionable.

Therefore, the constraint that the recipient/beneficiary must be [+animate] can be promptly derived from the semantic-pragmatic constraint stated in (a) above.

What is noteworthy about the expression of transfer of possession when Brazilian Portuguese and English are compared is the fact that both languages allow this expression to be made by way of sentences that can be described as the dative alternation. However, in Brazilian Portuguese there are distributional restrictions for dative alternations that do not apply to English. Both morphosyntactic and sociolinguistic factors are intertwined in the configuration of the restrictions that constrain the dative alternation in Brazilian Portuguese. From the morphosyntactic point of view, as described in Bechara (2003), Brazilian Portuguese favors dativized pronouns, but full NPs are dispreferred. This is in contrast with English, as illustrated in the following sentences:

6. a- The teacher gave the student an apple.
- b- \*/? O professor deu o estudante uma maçã.
- c- The teacher gave him an apple.
- d- O professor deu-lhe uma maçã.

However, sociolinguistic factors also seem to apply, as stated above. Scher (1996) and Gomes (2003) (apud Zara et al., 2013) report the availability of dativization of recipient/beneficiary in some dialectal varieties of Brazilian Portuguese, especially those spoken in areas of Minas Gerais and central Brazil. This sociolinguistic variation seems to be topped by pragmatic factors, as such occurrences are most likely connected to highly informal conversational discourse. Such is the case of the example in (7), a sentence frequently uttered by one of the authors of the present paper in interactions with his two year-old child, which may be described as a surface form approximating the distribution of constituents found in the English dative alternation with dativized full NP recipient/beneficiary.

7. Vem dar o papai um beijinho.  
*Come give daddy a little kiss.*

These distributional constraints imply that there are manifestations of the dative alternation, namely those instantiating its <NP-V-Recipient/beneficiary full NP-Theme NP> realization, that are fully licensed in English, but which can sound ungrammatical, anomalous or infelicitous to most speakers of Brazilian Portuguese. This has been shown to be the case by results of the experimental study reported in Zara et al. (2013). Indeed, the highly marked nature of the English dativized full NP recipient/beneficiary in Brazilian Portuguese is further attested by the absence of occurrences of this syntactic pattern in corpus data composed of samples of conversational discourse – including casual and informal exchanges – produced by Brazilians from the area where this form has been proposed to be productive (Zara, 2014).

Thus, we understand the dative alternation to be a construction about which the grammars of Brazilian Portuguese and English partially overlap. Both languages license dativized indirect objects inasmuch as the recipient/beneficiary NP is realized as a pronoun. A full NP recipient/beneficiary is mostly constrained by animacy in English.<sup>6</sup> Although this form is attested to occur in Brazilian Portuguese, in this language it is highly marked, and dependent on dialectal variety and pragmatic specifications. Nonetheless, just like the induced movement alternation, the English dative alternation and its several constraints have been demonstrated to be acquired by Brazilian Portuguese L1 learners of English L2 when they reach a certain proficiency threshold in the L2 (Zara et al., 2013).

In the following section we describe the methods we employed to probe the question of whether Brazilian Portuguese-English bilinguals' metalinguistic awareness of L1 constraints on both the expression of induced movement and expression of transfer of possession would be affected by their bilingualism, in accordance to the tenets of the multicompetence hypothesis.

## 5. Materials and methods

Fifty Brazilian subjects, 30 women and 20 men, with an age average of 25 years were recruited by a

snowball sampling procedure and invited to take part in the present study. All participants were college students at the university with which the authors of the present study are affiliated. Participants were screened by administration of a speeded version of the *Vocabulary Levels Test (VLT)*, (Nation, 1990). VLT scores allowed the formation of three comparable groups according to linguistic profiles: monolinguals of BP; low L2 proficiency Brazilian Portuguese-English bilinguals; and high L2 proficiency Brazilian Portuguese-English bilinguals. The VLT places test-takers in five vocabulary size levels, the first of which is indicative of vocabulary knowledge restricted to the 2,000 more frequent words in English, the second indicative of knowledge of the 3,000 more frequent words, the third level corresponding to the 5,000 most frequent words, the fourth corresponding to academic vocabulary, and the highest and fifth level indicating knowledge of vocabulary beyond the 10,000 more frequent words. We defined as “monolinguals” those participants who failed to go beyond level one. Participants who stopped at level three were labeled “low L2 proficiency”. Participants who reached levels four and five were labeled “high L2 proficiency”.

VLT items are straightforward word-meaning association tasks. Figure 1 below reproduces a model item:

1 - business	
2 - clock	
3 - horse	( ) part of a house
4 - pencil	( ) animal with four legs
5 - shock	( ) something used for writing
6 - wall	

Figure 1 - Example of the Vocabulary Levels Test (VLT).

Our screening procedure yielded the group configuration detailed in Table 2, based on VLT scores:

**Table 2** – Distribution of the subjects into three groups according to the results of the VLTs

Groups	VLTs levels	N
Monolinguals of BP	1	14
Bilinguals of BP/EN low-proficient	2 and 3	16
Bilinguals of BP/EN high-proficient	4 and 5	20

The 50 participants were then invited to perform a speeded acceptability judgment task. They were exposed to a set of 80 sentences in their L1, Brazilian Portuguese, and instructed to judge the well-formedness of each. Judgments were made by way of a 5-point Likert scale in which 1 meant that the sentence was ungrammatical in Brazilian Portuguese, whereas 5 it represented a perfectly structured sentence. The procedures were adapted from Souza et al. (2015). The time ceiling for judgments was 6 seconds per sentence. This is twice the average time that according to Souza et al. (2015) it takes college-educated native speakers to make judgments that are consistent with predictions made by theories of grammar for the grammaticality status of sentences in their L1. This too is the temporal ceiling employed in the study reported by Souza and Soares-Silva (2015), whose procedures were also adapted from Souza et al. (2015), in which the authors found judgments for L2 sentences consistent with grammaticality statues predicted in grammar theory among high L2 proficiency bilinguals of Brazilian Portuguese and English. Actual trials were preceded by detailed instructions and 10 practice items, one of which is illustrated below:

Esta sentença é só um exemplo para praticar.

*This sentence is only an example to practice.*

Julgamento: tecle 1 ou 2 ou 3 ou 4 ou 5

*Judgment: Press 1 or 2 or 3 or 4 or 5*

Out of the 80 sentences used in our SAJ task, 64 were distracters, 32 of which displayed perfect word order, and 32 were notoriously ungrammatical in Portuguese. Sentences (9) and (10) exemplify each distracter type respectively:

9. Você conhece o garoto cuja mãe é uma enfermeira?

*Do you the boy whose mother is a nurse?*

10. \*O doutor chorou o paciente em seu consultório.

*\*The doctor cried the patient in his office.*

The critical items for the present study were made up of 16 sentences, 8 of which instantiated forced

dativized full NPs (exemplified in sentence (11)), and 8 of which instantiated forced induce-movement alternation sentences (exemplified in sentence (12)).

11. \*Carlos trouxe Suzana flores por seu aniversário.

*Carlos brought Suzana flowers for her birthday.*

12. \*A criança voou o pássaro verde para fora da gaiola.

*The child flew the green bird out of the cage.*

## 6. Data analysis and discussion

For data analysis we compared the mean judgments for both the dative alternation sentences and the induced movement alternation sentences with the mean judgments for a set of 8 randomly selected grammatical sentences. The rationale of this procedure was the testing of the null hypothesis that there would be no difference in the mean judgments elicited by grammatical sentences and the two types of English argument structure constructions. We assumed that if the online processing observations reported in Souza's (2012, 2014) studies did endure a change to delayed metalinguistic awareness, then the null hypothesis would not be rejected for the high L2 proficiency group at least. Before conducting the data analysis proper we probed the normality of means for the acceptability judgments. Results from Kolmogorov-Smirnov test revealed that normality was a reasonable assumption, since the distribution did not differ significantly from the normal distribution ( $KS=0.06$ ,  $p=0.8$ ).

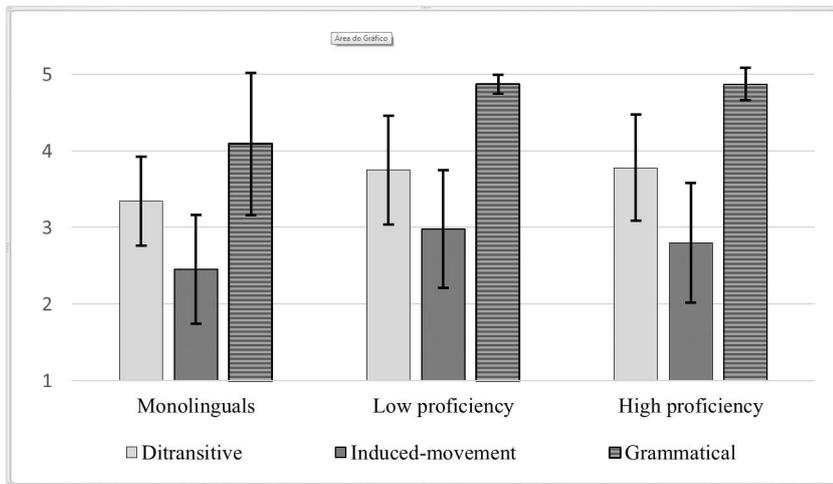
Thenceforth, we applied a repeated-measure Analysis of Variance considering sentence type as independent variable in order to see whether there were differences within groups in the judgment of the three types of sentences. The mean judgments and standard deviations of the monolingual group ( $n=14$ ) per sentence type were as follows: ditransitive sentences ( $m=3.34$ ,  $sd=.582$ ); induced-movement sentences ( $m=2.45$ ,  $sd=.714$ ); and grammatical sentences ( $m=4.09$ ,  $sd=.935$ ). In a subject as random factor revealed a main effect of sentence type,  $F(2,26)=18.34$ ,  $p<.05$ ,  $\eta_p^2=.585$ . Similarly, when items were taken as a random factor, a main effect of sentence type was

observed:  $F(2,14)=6.46$ ,  $p<.05$ ,  $\eta_p^2=.480$ . Post-hoc pairwise comparisons with the Bonferroni correction revealed statistically significant differences ( $p<.05$ ) across the three sentence types.

Likewise, the low L2 proficiency group ( $n=16$ ) revealed a main effect of sentence type in the judgments made for the ditransitive sentences ( $m=3.75$ ,  $sd=.713$ ), induced-movement sentences ( $m=2.98$ ,  $sd=.779$ ), and grammatical sentences ( $m=4.87$ ,  $sd=.121$ ). This effect was observed both with subject as random factor,  $F(2,30)=46.05$ ,  $p<.01$ ,  $\eta_p^2=.754$ , and with item as a random factor,  $F(2,14)=20.59$ ,  $p<.01$ ,  $\eta_p^2=.746$ . Post-hoc pairwise comparisons with the Bonferroni correction revealed statistical significance in the differences across the three sentence types ( $p<.05$ ).

Finally, for the high L2 proficiency group ( $n=20$ ) sentence type also produced a main effect. The mean judgment rate and standard deviations for each type was as follows: ditransitive sentences ( $m=3.78$ ,  $sd=.697$ ); induced-movement sentences ( $m=2.80$ ,  $sd=.789$ ); and grammatical sentences ( $m=4.87$ ,  $sd=.217$ ). The main effect was observed in analysis with subject as random factor,  $F(2,38)=75.61$ ,  $p<.01$ ,  $\eta_p^2=.799$ , and also in analysis with item as random factor,  $F(2,14)=32.95$ ,  $p<.01$ ,  $\eta_p^2=.825$ . Post-hoc pairwise comparisons with the Bonferroni correction revealed the differences across the three sentence types to be reliable ( $p<.01$ ). The descriptive data are displayed below:

**Graph 1** – Judgment scores of sentence type by proficiency level groups



These observations led us to safely reject the null hypothesis of undifferentiated mean judgment rates for the three sentence types in the three groups. This behavior was predictable for the monolingual group, and also predictable for the low L2 proficiency group, as according to Souza's (2012, 2014) it is only among high L2 proficiency bilinguals that the departure from L1 norms in the processing of L1 sentences with L2 argument structure constructions is observed. However, the present observations were not expected for the high L2 proficiency group, if the reported results of online processing studies are again considered.

Therefore, we interpret these results as evidence that the bilingualism effects on L1 performance reported in Souza (2012) and Souza (2014) do not extend into metalinguistic awareness of what is licensed in the L1. It should be noted that the pattern of our results, as illustrated by Graph 1 above, is actually a confirmation of the theoretical account of the ungrammaticality of synthetic causative constructions with verbs of manner-of-motion and the relative abnormality of dative full NPs in the Portuguese language. Furthermore, our data support the analysis of the English ditransitive construction as standing in a partial degree of grammaticality in Brazilian Portuguese. As can be seen in Graph 1, these constructions yielded acceptability rates that are intermediate between the induced movement alternation and the fully grammatical sentences for the three language profile groups we studied.

Above all, we understand the present results to reflect the fact that the acceptability judgment task we employed taps a different psycholinguistic mechanism than that tapped by the self-paced reading task and the oral sentence recall task employed in Souza's (2012, 2014) previous studies. Whereas the self-paced reading task and the oral sentence recall task detect effects of highly localized, temporary, and implicit access to language representations for the immediate requirements of real time language processing, the acceptability judgment task detects attention-driven inspection of a representation of linguistic information that is maintained in working memory after processing has taken place. The fact that the present results are at odds with those reported in online processing studies leads us to assume that our SAJ task detected psycholinguistic processes different from the other tasks, despite the fact that the strict time ceiling of our task configuration (6 seconds per sentence) was meant to approximate the task requirements as much as possible from online processing, or at least to avoid the involvement of overt recollection of language rules-of-thumb or highly rationalized language analysis.

## 7. Conclusion

This study was an exploration of the extent of bilingualism effects on L1 representation. We compared results obtained in a speeded acceptability judgment

(SAJ) task in which monolingual speakers of Brazilian Portuguese and two groups of Brazilian Portuguese-English bilinguals, each at a different levels of L2 proficiency had a time ceiling of 6 seconds to make judgment about sentences presented in Portuguese. We employed sentences instantiating simulations of the English induced movement alternation, and sentences instantiating dativized full NP objects, a structure that is more constrained in Portuguese than in English. Comparison of the two critical sentence types with fully grammatical sentences yielded different judgment rates across all three groups, revealing that all of them were aware of the grammatical restriction of their L1 at the moment they expressed their judgments.

The results obtained with the high L2 proficiency group in particular are at odds with studies that indicate a departure of the L1 grammatical restriction in online processing of L1 simulations of one of the argument structure constructions of the present study. Interestingly, the online processing observations were made with sentences that simulated the English-only construction. This fact indicates that the highly salient language identity of the construction does not keep its L1 simulation from being processed in ways that are divergent from L1 monolinguals. However, when the task was switched to one that involves metalinguistic awareness, such as the SAJ in the present study, the higher degree of relative language specificity of one the constructions (the induced movement alternation) produced a clear measurable distinction from the partially acceptable construction – the dativized full NP objects.

We conclude that the bilingualism effects detected in online processing are probably evanescent, not lasting enough to modify metalinguistic awareness as it is activated in a focused task. Specifically, the results of the present study allow us to specify that the multicompetence effects previously reported do not last as long as six seconds. This situation has relevant consequences for the development of models of bilingual language processing. Whereas it is now largely accepted that a high level of integration of linguistic representations will ensue from the bilingual experience, it seems that at least with bilinguals whose profile resembles our participants (late L2 acquirers

immersed in an L1 context) the co-activation of unintended language representations may be quickly overruled. This suggests a reasonable level of language control with respect to the probably dominant, stronger language. On the other hand, the verification of online processing bilingualism effects that disappear when the bilingual reaches a level of processing that allows for metalinguistic awareness to be activated indicates that those effects are probably governed by implicit processes that fail to reach metalinguistic awareness. It is precisely these two implications of our conclusion, namely the question of language control and the nature of bilingual language representations, that we aim at pursuing in the aftermath of the present study.

#### Notes

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2. Despite our use of the term “alternation” and our awareness that the term stems from frameworks in syntactic theory that assume layers of representation from which surface forms are derived, all descriptions in this section make reference to surface forms only. We understand the notion of syntactic derivation to be inconsequential for the purposes of the present discussion. Our maintenance of the term “alternation” is due only to its use in part of the descriptive literature we relied on.
3. The Portuguese sentences are directly equivalent to the preceding English sentences in all examples, except (7). Therefore, we only provide a gloss for the Portuguese data in that example.
4. This label establishes a clear analogy with languages in which the configuration “object of preposition” entails overt dative case morphological marking. Such is the situation of a few Portuguese pronouns (e.g.: *lhe*). The term “alternation” in this case is inherited from a theoretical interpretation of ditransitive sentences according to which a dativized indirect object is displaced from the position of complement in a PP over the course of syntactic derivation.
5. See Gries (2003) for a more detailed corpus-based account of factors possibly controlling the choice of the dative alternation as opposed to the complement of preposition realization of the receiver/beneficiary NP in ditransitive constructions in English.

6. It is important to emphasize that other constraints have been described to modulate the licensing of the dative alternation in English. Therefore, there are situations when a dativized indirect object is highly dispreferred in English. For example, the construction is more likely to occur with monosyllabic verbs of Saxon origin, it is modulated by pragmatic variables such as focus and givenness, and also by the phonological weight of NPs. See Goldberg (1995) and Gries (2003) for details and reviews of relevant literature.

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