

Evidence for syntactic feature transfer between two languages

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In this commentary, I would like to support Goad and White's (2019, henceforth G&W) claim that the morphosyntactic feature system in the L2 does not have to be defective due to certain syntactic features not being activated in the L1. I will base my point on the example of grammatical gender. Moreover, I would like to stress the importance of developing processing models for lexico-syntactic features in bilingual speakers. Processing models may be able to account for why L2 learners behave in a particular way. For instance, G&W (p. 791) refer to a study by Goad et al. (2011), suggesting that "beginners fluctuate between deletion of the plural and resorting to the structure for verbal inflection". However, they do not provide an answer as to why L2 learners behave in that way. In other words, a processing account is missing. A comprehensive (neuro-)cognitive model of grammatical feature representation and processing may help understand error patterns in L2 production.

In their keynote paper, G&W argue that defective morphosyntactic production of L2 speakers is likely due to the transfer of prosodic constraints from the L1 (the so-called *Prosodic Transfer Hypothesis*; PTH) and not due to a representational deficit of morphosyntactic features as suggested by Hawkins and colleagues (the so-called *Representational Deficit Hypothesis*; RDH). According to Hawkins and colleagues (Hawkins, 2000; Hawkins & Liszka, 2003; Hawkins & Franceschina, 2004) seemingly defective L2 productions, such as morphological errors, are the result of a failure to successfully transfer L1 morphosyntactic features to the L2. Hawkins and colleagues' claim is that L2 speakers do not have access to specific properties or features of Universal Grammar because these features have not been activated in the L1. Support for this claim comes, for instance, from tense errors in L1 Mandarin speakers of L2 English. Mandarin lacks the tense feature, which is why this feature is not available for transfer into the L2 learners' English. Compared to Japanese and German learners, Mandarin learners of L2 English have more problems producing past tense morphemes (Hawkins & Liszka, 2003) due to the

fact that Japanese and German realize tense overtly whereas Mandarin does not. It should be noted, however, that there may have been many other reasons for the observed differences in tense errors between the three groups of learners (e.g., typological distance, proficiency; Rothman, 2015). Contrary to Hawkins and colleagues, G&W argue against the idea that the representation of morphosyntactic features is permanently defective. Instead, they propose a prosodic account to explain the errors found in the domain of inflectional morphology, namely transfer of prosodic constraints from the L1 to the L2. In that sense, the PTH and the RDH share the core assumption that difficulties with inflectional morphology reflect a representational deficit, in the prosodic and morphosyntactic domains, respectively.

Many languages use grammatical gender to structure their nominal system and grammatical gender can be expressed in a variety of ways (see overview in Corbett, 1991). Since the 1990's, experimental linguistic and psycho-/neurolinguistic research on grammatical gender processing has provided more insight into how speakers represent and process this syntactic feature and its morphological expression (Finocchiaro et al., 2011; La Heij et al., 1998; Miozzo & Caramazza, 1999; Schiller, 2013; Schiller & Caramazza, 2006; Schiller & Costa, 2006; Schriefers, 1993; Wang & Schiller, 2019). In all Germanic languages but English, grammatical gender is expressed by different forms of the article. For instance, Dutch has common and neuter gender. In Dutch NPs, the determiner must match the gender of the head noun, e.g., *de lepel* (the_{com} spoon_{com}) vs. *het mes* (the_{neu} knife_{neu}). Other languages, such as German, distinguish three grammatical genders, namely masculine, neuter and feminine, e.g., *der Tisch* (the_{mas} table_{mas}), *das Buch* (the_{neu} book_{neu}), *die Wand* (the_{fem} wall_{fem}) (mas = masculine gender; neu = neuter; fem = feminine; com = common). In modern English, grammatical gender can be observed in the pronominal system, but grammatical gender is no longer marked on the article. G&W (p. 784) state that “articles are often omitted in the production of L2ers who come from L1 backgrounds that lack articles or have only one article”. This last statement is interesting in the light of a study on English (L1) – Dutch (L2) speakers, since English has only one definite article.

Ganushchak, Verdonschot and Schiller (2011) reported a study on grammatical or syntactic gender feature transfer from a language with a full-fledged gender system (Dutch) to one with a minimal gender system (English). Dutch-English bilingual participants determined the grammatical gender of white-printed Dutch words and the color of color-printed words (i.e., common and neuter gender Dutch words plus their English equivalents). Prior to the experiment proper, two practice blocks were administered. First, participants saw the white words in Dutch. On a button box, they pressed a left key when the word had common gender (e.g., *de lepel*) and a right key when words had neuter gender (e.g., *het mes*). Second, they

were presented with Dutch and English words in both green and blue, and pressed a left key for words in green and a right key for words in blue. In the experiment proper, white and colored words (not given before) were presented in a random order. None of the green/blue words were shown in white. Participants determined the grammatical gender (*de* vs. *het*) of white words – as in the first practice block. If words were colored, they were instructed to carry out the classification based on the color (blue vs. green) – as in the second practice block (see Ganushchak et al., 2011, for details).

In the experiment proper, participants made both classifications with the same hand (so-called “congruent trials”) or different hands (so-called “incongruent trials”). For instance, when the color classification (blue vs. green) and the gender discrimination (*de* vs. *het*) required a response with the same hand (e.g., left or right), this was considered a congruent trial, otherwise incongruent. Interestingly, participants made more errors and the error-related negativity, an electrophysiological measure of brain activity specifically sensitive to error processing, was higher on incongruent relative to congruent trials (i.e., higher negative amplitude). Importantly, in critical trials (i.e., those requiring a color decision), participants were requested to make a non-linguistic color classification. Regarding erroneous color classifications, incongruent and congruent trials should not differ because both types of trials include an incorrect classification of the color of the print (e.g., blue instead of green or vice versa). However, regarding the discrepancy between the response mappings for grammatical gender created by responses to white words and color, there was a difference between congruent and incongruent trials. That is, there was a mismatch between color and gender response mapping in incongruent trials, whereas in congruent trials there was no such mismatch. Crucially, even when performing a non-linguistic color decision, apparently participants did not only process the color of the print of the word. Instead, its grammatical gender was also retrieved automatically. Critically, it seems that participants have transferred grammatical gender information from their first language, Dutch, to a second language, English. This is remarkable in the sense that the latter language does not represent grammatical gender in its nominal system. This result may suggest that within the bilingual language processing system there is a strong link between the lexical representations of the languages.

The study by Ganushchak et al. (2011) does not directly provide evidence for the PTH, but like G&W it speaks against the RDH, which states that uninterpretable grammatical features cannot be transferred from one language to the other. English does not have grammatical gender in its nominal system. Nevertheless, Dutch (L1) speakers clearly showed effects of grammatical gender when classifying colored words in English, demonstrating that lexico-syntactic features can be transferred to an L2 and its representation is used on-line. Further research on the

(neuro-)cognitive processing of grammatical features is necessary to arrive at a comprehensive model of grammatical transfer to L2, its representation and access.

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Publication history

Date received: 8 July 2019

Date accepted: 6 August 2019

Published online: 7 October 2019