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Accentual marking of information status in Dutch and French as foreign languages. Production and perception.

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ABSTRACT

This paper explores (non-)native speakers' use and perception of accent as a cue to information status in Dutch and French as foreign languages. On the production side, French-speaking learners of Dutch tend not to vary the accent distribution according to the information status of the words in the utterance and generally do not deaccent contextually given information in a nativelike fashion, whereas Dutch-speaking learners of French, though on the whole closer to the L1 French target, tend to overuse the French "focus accent" in such a way that their accent patterns more closely reflect the information status of the words than the patterns produced by L1 French speakers. These results are explained in terms of the "markedness relationships" between Dutch and French. A pilot perception experiment then investigates (non-)native listeners' perception of prominence relationships in L1 and L2 Dutch. The data show that the accented elements produced by L2 speakers of Dutch are perceptually less prominent than accented elements produced by L1 speakers, that this reduced prominence makes it more difficult for L1 listeners to correctly identify the intended patterns, and that non-native listeners generally find it difficult to identify the intended accent patterns in their L2.

Keywords: Prosody, accentuation, L2 acquisition, Dutch, French.

1. INTRODUCTION

The last two decades have witnessed a fast-growing interest in the prosodic features of speech (e.g. stress, accent, intonation, rhythm; see Fox 2000 for an historical survey). Yet, in spite of the rapid development and increasing success of prosodic analysis, current knowledge about non-native prosody is still very limited (Chun 2002, Trouvain and Gut 2007, Gut 2009). This paper examines accentuation, which is defined as an utterance-level phenomenon related to the focus structure of the utterance (Cutler 1984, Van Heuven 2002), in non-native speech production and perception. It focuses on Dutch spoken by francophone L2 learners (L2 Dutch) and French spoken by Dutch-speaking L2 learners (L2 French). Section 2 discusses previous research on accentuation in L2 speech. Section 3 focuses on the use of (de)accentuation as a cue to information status in L2 Dutch and L2 French. Section 4 reports on a pilot perception experiment in L2 Dutch. Section 5 draws some conclusions about accentuation in non-native speech production and perception.

2. ACCENTUATION IN NON-NATIVE SPEECH

As a prosodic feature, accent has generated considerable debate (Fox 2000, Ladd 1996). In the context of L2 acquisition, by contrast, current knowledge about accentuation in a second/foreign language is still limited (Gut 2009: 221). Several studies report a general tendency for L2 speakers to produce more pitch accents than L1 speakers do (Grosser 1997, Juffs 1990). Gut (2000), in contrast, does not find any overuse in comparison with native speech, but observes differences in accent placement (see also Adams 1979, Backman 1979, Grosser 1997, Ramirez Verdugo 2002). Grosser (1997) finds for Austrian learners of English that information, which does not normally require any pitch accent, is still produced as accented in 45 to 90% of all cases. Exploring Spanish English Ramirez Verdugo (2002) also observes that contextually given information often gets accented and that the main pitch accent in the utterance tends to be realized on the utterance-final element irrespective of its information status or word class. Barlow (1998), however, does not find any accent placement differences between L1 and L2 speakers of English with various L1 backgrounds.

Rather, Barlow finds phonetic differences in accent production. L2 speakers underuse melodic and temporal cues to accent and rely on higher intensity values to mark utterance elements as accented. Phonetic differences between L1 and L2 accent production are also reported in Grosser (1997), Kelm (1987), Ramirez Verdugo (2002) and Wennerstrom (1994). Ramirez Verdugo (2002) shows that Spanish L2 speakers of English use the same type of melodic movement to signal new and given information, whereas L1 speakers use distinct pitch movements. Non-native pitch movements also appear to have a smaller excursion size than native ones. Wennerstrom (1994) examines the pitch height of new and given information in L1 and L2 English and finds that L1 speakers produce higher pitch on new information than on given information, whereas L2 speakers use the same pitch height for all elements, regardless of their information status.

The studies reviewed so far examine English as a second/foreign language. In many other non-native varieties, accentuation still constitutes uncharted ground. This is e.g. the case in L2 Dutch and L2 French.

3. ACCENTUAL MARKING OF INFORMATION STATUS IN L2 DUTCH AND L2 FRENCH

It has been claimed that local pitch movements (e.g. pitch accents) are universally used to signal contextually new or important information (e.g. Bolinger 1989). However, there exist cross-linguistic differences in the extent to which accent patterns constitute a cue to focus. Vallduvi (1991) makes a distinction between plastic and non-plastic languages. In plastic languages, prominence patterns can be manipulated in such a way that they reflect the focus structure of the utterance. In English e.g. accent patterns can be modified so that the “givenness” of the normally accented word(s) is reflected by means of deaccentuation. Non-plastic languages, in contrast, are characterized by “fixed” accentuation so that syntactic means must be used to achieve the same effect as (de)accentuation in plastic languages. Non-plastic languages are a.o. Catalan (Vallduvi 1991), Italian (Swerts et.al. 2002) and Romanian (Swerts 2007). According to Ladd (1996: 294), French is also non-plastic as “[it] seem[s] to be most resistant to moving accent out of phrase-final or sentence-final position”, whereas Dutch is a plastic language (Krahmer and Swerts 2001, Swerts et.al. 2002).

3.1. Method

Rasier (2006) and Rasier and Hiligsmann (2007, 2009) have investigated accent placement in L1/L2 Dutch and French. The data were collected in a picture description task in which the participants had to describe geometrical figures (a circle, a triangle, a star, a square) appearing in different colours (red, yellow, blue, green) on a computer screen. Manipulating the presentation order of the stimuli made it possible to vary the information status of the words, resulting in four conditions on the adjective-noun pairs: New/New (NN), Given/Contrastive (GC), Contrastive/Given (CG), Contrastive/Contrastive (CC). A property is “new” when it has not yet been used in the discourse. It is called “given” when it has already been mentioned in the preceding context. A property that differs from the immediately preceding utterance is called “contrastive”.

The subjects were 20 French-speaking learners of Dutch and 20 Dutch speaking-learners of French who had been learning the L2 for 8-10 years in a school setting in Belgium and in the Netherlands. All of them were second year students of economics or business communication at a Belgian or Dutch university. Their ages varied between 19-20 years. They took the test in their L1 and L2. The data were transcribed by the first author of this paper with the aid of two phonetically trained judges who were native speakers of Dutch and French, respectively. The transcriptions were then compared and discussed until agreement was reached.

3.2. Results

L1 Dutch is characterized by a high association between information status and accentuation (Cramer’s $V = 0.878$), which indicates that the accent distribution on the elicited NPs generally reflects the information status of the words in the utterance. In the NN- and CC-conditions, both the adjective and the noun are accented in 90% and 95% of all cases, respectively. In the GC-condition, a single accent on the noun (i.e. the contrastive element) can be found in 50% of the cases, whereas both the (contextually given) adjective (in prenuclear position) and the noun are accented in 45% of the cases. In the CG-condition, a single accent on the C-element is found in 98% of the cases, which shows that L1 Dutch does not allow the accentuation of the noun in postnuclear position in the CG-condition. This is in accordance with Krahmer and Swerts (2001)

and Swerts et.al. (2002) who show that in Dutch nuclear accents can sometimes be preceded by prenuclear ones, even in contrastive settings, whereas they are rarely followed by postnuclear ones.

A lower association between information status and accentuation can be observed in L1 French than in L1 Dutch (Cramer's $V = 0.615$), pointing to a lower degree of plasticity in L1 French. Indeed, the phrase-final element is most frequently accented in the four experimental conditions (NN: 100%, GC: 100%, CG: 70%, CC: 97%). However, it is generally preceded by another accent on the first syllable of the first lexical item (i.e. "bridge accent"; NN: 60%, GC: 60%, CG: 57%, CC: 83%) or on the indefinite article (i.e. "extended bridge accent"; NN: 30%, GC: 30%, CG: 0%, CC: 7%). Interestingly, there are cases in the CG-condition where the accent is moved out of phrase-final position so that only the contrastive piece of information in non-final position is accented (i.e. "focus accent"; CG: 30%), but this is less often the case than in L1 Dutch. So, unlike Catalan or Italian, French sometimes allows given information to be deaccented.

Looking at non-native speech, it appears that L2 Dutch speakers make significantly more accent placement errors than L2 French speakers (47% vs. 78% contextually adequate accent patterns; $\chi^2 = 36.0$; $df = 2$; $p < 0.001$). This suggests that it is easier to shift from a plastic to a non-plastic language (i.e. Dutch $\rightarrow$ French) than the other way around (i.e. French $\rightarrow$ Dutch). L2 Dutch is also characterized by a lower association between information status and accentuation than L1 Dutch (Cramer's $V = 0.600$ vs. 0.878), which means that L2 Dutch speakers do not prosodically distinguish between given and new/contrastive information to the same extent as L1 Dutch speakers. Indeed, L2 Dutch speakers in most cases accentuate both the adjective and the noun notwithstanding their information status (NN: 60%, GC: 70%, CG: 50%, CC: 83%), which results in significantly lower deaccentuation rates in L2 Dutch than in L1 Dutch, i.e. 5% vs. 50% in the GC-condition ($\chi^2 = 16.2$; $df = 1$; $p < 0.001$) and 35% vs. 95% in the CG-condition ($\chi^2 = 28.1$; $df = 1$; $p < 0.001$). L1 and L2 French, by contrast, have quite close association coefficients between information status and accentuation (Cramer's $V = 0.615$ in L1 French vs. 0.632 in L2 French). However, the fact that the association measure is slightly higher in L2 French than in L1 French suggests that the accent patterns produced by L2 French speakers more closely reflect the information status of the words in the utterance than the patterns used by L1 French speakers. L2 French speakers use the "bridge accent" pattern in a nativelike manner in the NN- and CC-conditions. This pattern is also the most frequent one in the GC-condition, but L2 French speakers also produce a single (focus) accent on the phrase-final element more often than L1 French speakers (18% in L2 French vs. 5% in L1 French). The tendency to produce a single (focus) accent on the contrastive piece of information, leading to the deaccentuation of the contextually given element, is even clearer in the CG-condition where a single accent is produced on the contrastive piece of information in 56% of the cases (vs. 30% in L1 French), while L1 French speakers still use the "bridge accent" pattern in the majority of the cases (67% of the cases in L1 French vs. 38% in L2 French).

3.3. Summary and discussion

The L1 Dutch data support the view that Dutch is a plastic language as accentuation can be varied in such a way that it reflects the information status of the words in the utterance. However, structural constraints also apply when it comes to determining the exact position of the accent within the focussed constituent (Gussenhoven 1984, Kruyt 1985). So, accentuation in Dutch can be characterized as $\square$ pragmatic $\square$ structural. In French, in contrast, accentuation is mainly governed structurally by the surface position in the utterance, although at times pragmatic reasons can lead to accent being moved to a constituent in non-final position. French accentuation can therefore be described as $\square$ structural $\square$ pragmatic. This makes French different from other Romance languages such as Italian or Catalan where accent placement is governed structurally ($\square$ structural $\square$), whereas no language has been reported where accentuation is only governed pragmatically.

Typologically, these observations imply that a language with structural accentuation rules does not necessarily have pragmatic accentuation rules as well, while the reverse is not true. In terms of markedness, a structure A is typologically more marked relative to another structure B if every language that has A also has B, but every language that has B does not necessarily have A (Gundel et al. 1986: 108). In this sense, then, pragmatic accentuation rules are more marked than structural ones. In this respect, Eckman's *Markedness Differential Hypothesis* (Eckman 1984, 2008) predicts that marked structures are more difficult to learn than

unmarked ones. As pragmatic accentuation rules are more marked than structural rules and pragmatic rules have a dominant position in Dutch – but not in French – one can explain why it is easier to shift from a plastic to a non-plastic language (Dutch → French, i.e. marked → unmarked) than the other way around (French → Dutch, i.e. unmarked → marked). The diverging degrees of markedness of structural and pragmatic accentuation rules also explain why L2 French speakers produce the French “bridge accent” pattern, which is a largely structurally governed – and therefore unmarked – accent pattern, in a nativelike fashion, whereas L2 Dutch speakers generally do not succeed in applying the Dutch deaccentuation rule in a contextually adequate way in spite of the fact that this rule also exists in French (cf. “focus accent”). Deaccentuation is a marked rule in French and marked L1 rules are less likely to be transferred to the learners’ L2 than unmarked ones. The French “bridge accent”, by contrast, is an unmarked pattern so that L1 transfer and the surface similarity between the French “bridge accent” and the Dutch “double accent” can explain why this pattern is used in L2 Dutch regardless of the information status of the words in the utterance. As there is evidence that accenting given information can delay sentence comprehension in Dutch (Terken and Nooteboom 1987) and that sentence comprehension is sensitive to accentual structure in native listeners (Akker and Cutler 2001: 92), French-speaking learners’ deaccentuation errors could be detrimental to Dutch listeners’ processing of L2 speech. For Dutch-speaking learners of French, however, deaccenting given information is less marked than for L1 French speakers, and this can explain why it is more often deaccented in L2 French than in L1 French. To our knowledge, the effect of (de)accentuation errors on sentence comprehension in French has not been studied so far.

4. ACCENT PERCEPTION IN L2 DUTCH: A PILOT STUDY

On the production side, L1 Dutch and L1 French prosodically encode information status in different ways (i.e. in terms of accent distribution) and the differences between the two languages influence L2 speakers’ accent placement strategies. As accent is an important cue to focus in Dutch (but less so in French), the question arises whether accentuation differences can be perceived by non-native Dutch listeners (Watanabe 1988) and to what extent they can process prosodic information for semantic structure in a nativelike fashion (Akker & Cutler 2001). This section examines pilot data on accent perception in L1 and L2 Dutch.

4.1. Method

Starting from the production data, a perception experiment was carried out in a web-based environment. The research questions were how well accentuation differences can be perceived in L1 and L2 Dutch, which accent patterns are the most/least difficult to perceive by (non-)native listeners, whether systematic “patterns of substitution” can be identified, and what these are due to. The stimuli for the perception test were selected from the production data according to the sex of the speaker (female voices), her language background (L1 and L2 speakers in equal proportions), the speech quality (no disfluencies), and the type of accent pattern (single accent on the adjective, single accent on the noun, accent on both the adjective and the noun). The three accent patterns appear in the materials in equal proportions. Each stimulus was produced with an L%- and an H%-boundary tone and was presented in the experiment twice. Four listening conditions occur in the test: L1 Dutch listeners/L1 Dutch speakers, L1 Dutch listeners/L2 Dutch speakers, L2 Dutch listeners/L1 Dutch speakers, L2 Dutch listeners/L2 Dutch speakers¹.

The listeners were 10 native speakers of Dutch and 10 francophone learners of Dutch who had been learning the L2 for 8-10 years in a school setting in Belgium. They were second year students of economics or business communication at a Belgian (L2 listeners) or Dutch university (L1 listeners). Their ages varied between 19-20 years. The test included 10 training items and 72 test items. The task consisted in evaluating the relative degree of prominence of both the adjective and the noun on a 10-point scale. The participants could listen to the same item twice before responding. Prominence is regarded as the perceptual consequence of “accentedness”, which leads to the assumption that listeners’ prominence judgements reflect the accent patterns they hear in speech. Therefore the accent patterns perceived by native and non-native listeners were derived from their prominence judgements. Elements with a prominence level equal to or above 5 points are considered as “accented”, whereas elements with a prominence level below 5 points are regarded as

“unaccented”. Also there had to be a difference of at least 2 points between the adjective and the noun for one of the two elements to be regarded as more prominent than the other.

4.2. Results

Native listeners identify the expected accent pattern in 61% of the cases when they listen to L1 Dutch speakers and in 52% of the cases when they listen to L2 speakers. The difference between the two listening conditions is not significant ($\chi^2 = 3.4$; $df = 1$; $p = 0.065$). Non-native listeners, by contrast, identify the expected accent pattern in native speech in 40% of the cases when they listen to L1 Dutch (vs. 61% by L1 listeners; $\chi^2 = 22.7$; $df = 1$; $p < 0.001$), whereas they identify the expected pattern in 45% of the cases when they listen to Dutch utterances produced by other French-speaking learners. The difference between the two listening conditions does not reach significance either ($\chi^2 = 1.8$; $df = 1$; $p = 0.183$).

Listening to L2 speakers, L1 Dutch listeners perceive the expected accent pattern in ca. 82% of the cases in the “two accents”-condition (i.e. accent on the adjective and the noun), whereas they perceive a single accent on the noun in 26% of the cases in the “single accent on the noun”-condition and a single accent on the adjective in just 21% of the cases in the “single accent on the adjective”-condition ($\chi^2 = 71.3$; $df = 2$; $p < 0.001$). Instead of a single accent on the adjective or the noun, native listeners perceive an accent on *both* elements in 96% of the cases in the “single accent on the noun”-condition and in 71% of the cases in the “single accent on the adjective”-condition. In the other cases, they perceive either a single accent on the adjective (i.e. 4% of the substitutions in the “single accent on the noun”-condition) or a single accent on the noun (i.e. 29% of the substitutions in the “single accent on the adjective”-condition). Substitutions are significantly more frequent (ca. 71%) in utterances ending on an L%-boundary tone than in utterances ending on an H%-boundary tone (ca. 29%; $\chi^2 = 26.6$; $df = 1$; $p < 0.001$).

Listening to L1 speakers, non-native listeners perceive the expected accent pattern in ca. 61% of the cases in the “two accents conditions” (i.e. accent on the adjective and the noun), whereas they perceive the expected pattern in 39% of the cases in the “single accent on the adjective”-condition (i.e. single accent on the adjective) and in only 15% of the cases in the “single accent on the noun”-condition (i.e. single accent on the noun) ($\chi^2 = 26.2$; $df = 2$; $p < 0.001$). The pattern with an accent on both the adjective and the noun accounts for 66% and 74% of the cases of substitution in the “single accent on the adjective”- and the “single accent on the noun”-condition. In the other cases, non-native listeners perceive a single accent on the noun in the “single accent on the adjective”-condition (34%) and a single accent on the adjective in the “single accent on the noun”-condition (26%). Most substitutions occur in utterances ending on an H%-boundary tone (54%), whereas non-native listeners perceive the expected pattern in ca. 65% of the cases when the utterance ends on a L%-boundary tone ($\chi^2 = 7.8$; $df = 1$; $p < 0.01$).

4.3. Summary and discussion

Native listeners identify the expected accent pattern more often when they listen to native speakers of Dutch than when they listen to non-native speakers. Though not significant, the observed difference is in accordance with the view that foreign-accented speech is generally less intelligible to native listeners than native speech (Munro & Derwing 1995, Van Wijngaarden 2001). Non-native listeners, by contrast, identify the expected accent pattern more often when they listen to non-native speakers (i.e. with the same L1) than when they listen to L1 speakers of the target language. Though not significant, the slight increase between the two listening conditions suggests nevertheless that non-native listeners benefit from listening to other L2 speakers (interlanguage speech intelligibility benefit; Bent & Bradlow 2003), while this is not the case for native listeners. Also, systematic patterns of substitution can be observed in native and non-native listeners.

In native listening (i.e. L1 Dutch listeners/L2 Dutch speakers), most substitutions consist of an accent on both the adjective and the noun where a single accent on either the adjective or the noun is expected. Such patterns mainly occur when the utterance ends on an L%-boundary tone. A possible explanation for such cases of perceptual substitution is that L2 speakers do not prosodically mark the distinction between accented and unaccented elements as clearly as L1 speakers do. Indeed, according to native listeners, there is a significant prominence difference between accented and unaccented information in L1 Dutch speech (unaccented = 3.64, StD = 1.25; accented = 6.05, StD = 1.62; $t = -15.0$; $df = 131.6$; $p < 0.01$), but not in L2

Dutch speech where the perceptual difference between accented and unaccented elements is less clear-cut (unaccented = 3.82, StD = 1.25; accented = 5.84, StD = 1.63; $t = -10.7$; $df = 86.4$; $p = 0.06$).

In non-native listening (i.e. L2 Dutch listeners/L1 Dutch speakers), most substitutions consist of an accent on both the adjective and the noun in cases where a single accent on either the adjective or the noun is expected. Non-native listeners also quite frequently perceive a single accent on the noun in cases where a single accent on the adjective is expected. Contrary to L1 listening, most substitutions can be observed in utterances ending on an H%-boundary tone. This suggests that the H%-boundary tone is actually interpreted as an (additional) phrase-final accent by non-native listeners. These results can be indicative of L1 influence on francophone learners' perception of accentuation in Dutch. Indeed, phrase-final elements are (nearly) always accented in French so that accent is used as a demarcative (i.e. boundary-marking) device (Lacheret-Du  ur and Beaugendre 1999). Moreover, the "two accents"-pattern is also the pattern which is most often used by francophone learners in speech production (see § 3.2).

5. CONCLUSIONS

This paper has undertaken a comparative study of prominence patterns in both native and non-native speech production and perception. On the production side, it has investigated to what extent accent is used as a cue to information status in Dutch and French spoken by native and non-native speakers. On the perception side, it has examined native and non-native listeners' perception of prominence patterns in L1 and L2 Dutch.

The production data reveal that Dutch and French are quite different in the way they encode information status in accent patterns. While L1 Dutch speakers vary their accent patterns according to the information status of the words, L1 French speakers generally accentuate both the adjective and the noun ("bridge accent") regardless of their information status in the utterance, although they sometimes produce a single accent on contextually contrastive information ("focus accent"). The L2 production data show that accent placement in non-native speech is influenced by L1 characteristics. The Dutch-speaking learners of French, though on the whole closer to the L1 French target, overuse the French "focus accent" in such a way that their accent patterns more closely reflect the information status of the words than the patterns produced by L1 French speakers. The francophone learners of Dutch, on the other hand, generally produce the same accent pattern (accent on the adjective and the noun) notwithstanding the information status of the words, and therefore do not deaccent contextually given information in a nativelike fashion. These results can be explained in terms of the "markedness relationships" between Dutch and French.

The perception study shows that native listeners identify the expected accent pattern more often when they listen to L1 Dutch speakers than when they listen to L2 Dutch speakers, which suggests that non-native speech, i.e. foreign-accented prosody, is less intelligible to native listeners than native speech and prosody. Non-native listeners, however, get better identification results when they listen to non-native speakers than when they listen to native speakers of the target language, i.e. interlanguage speech intelligibility benefit. In the two listening directions (i.e. L1 listeners/L2 speakers and L2 listeners/L1 speakers), native and non-native listeners frequently perceive an accent on both the adjective and the noun instead of a single accent on either the adjective or the noun. Native listeners' perceptual substitutions, which can mainly be observed in utterances ending on an L%-boundary tone, were argued to emerge from the fact that, according to L1 listeners, the difference between accented and unaccented elements in terms of prominence is less clear-cut in L2 Dutch than in L1 Dutch. Acoustic analyses are needed to determine which properties of the non-native stimuli make them perceptually less prominent than the native stimuli. Non-native listeners' substitutions, by contrast, mainly occur in utterances ending on an H%-boundary tone, which suggests that they interpret the H%-boundary tone as an (additional) phrase-final accent. The substitution patterns that were observed in non-native listeners can be related to properties of their L1, thereby pointing to L1 influence at the perception level. Future work will examine accent perception in French by native and non-native listeners (i.e. Dutch-learners of French) in order to get a better understanding of the way prominence patterns are perceived in an L2 as well as of the role the learners' L1 plays in it.

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NOTES

¹ This paper focusses on native listeners' perception of accent patterns in non-native speech (i.e. L1 listeners/L2 speakers) and on non-native listeners' perception of accentuation in native speech (i.e. L2 listeners/L1 speakers). The other conditions (i.e. L1 listeners/L1 speakers and L2 listeners/L2 speakers) will not be discussed in details.