

THE PROSODY-MORPHOLOGY INTERFACE IN GERMAN AND ITALIAN FROM A CONTRASTIVE PERSPECTIVE

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In this study, the interplay and the mutual influences between the prosodic and the morphological levels in German and in Italian are discussed. In German, phenomena like final-obstruent devoicing, insertion of linking elements, reduced syllables, lexical stress placement, nicknames, abbreviation and reduplication processes are taken into consideration. The Italian processes of shortenings, hypocoristics, word truncation, syntactic doubling, /s/-voicing and the insertion of epenthetic vowels are considered relevant for the prosody-morphology interface. Crosslinguistic similarities and differences are discussed and used to formulate hypotheses about the main difficulties encountered by German native speakers learning Italian and possible peculiar transfer processes. The main aim is to discuss the extent to which transfer phenomena based on prosodic and morphological constraints of German L1 can shape prosodic and morphological production in the acquisition phase of Italian as a second language.

Keywords: Prosody, Morphology, German L1, Italian L2, Prosody-Morphology Interface

1. Introduction

In language, all segmental phenomena interact with the suprasegmental level, since the suprasegmental level is hooked, in some way, to the segment¹. Morphemes are more than segments: they represent the smallest segmental unit with proper meaning. As units of meaning (Korth 2018), they also have a strong connection with the prosodic functioning of language. Indeed, the morphological and prosodic levels present different aspects that are characterized by mutual influence, as their segments often coincide. In this paper, the influences between prosody and morphology are described regarding both German and Italian; moreover, hypotheses are formulated about possible transfer processes in the acquisition of Italian as a foreign language² by German native speakers. These processes depend on the different interplay between prosody and morphology in the two cited languages.

¹ Studies have found that didactic training aimed at treating suprasegmental phenomena often leads to an improvement at the segmental level (Dahmen 2013). The influence of prosody on single phonemes is also discussed by Hirschfeld and Reinke (2016, 74).

² Henceforth described as Italian L2.

The main aim is to discuss the extent to which transfer phenomena based on prosodic and morphological constraints of the L1 shape prosodic and morphological production in the L2.

In the next sections, the interface between prosody and morphology will be described for German (§ 2.1) and for Italian (§ 2.2). Moreover, a short summary of the main differences and similarities between the two systems will be provided (§ 3). In conclusion, the extent to which the described systemic differences can lead to difficulties in the learning phase will be discussed, and peculiar transfer processes for German native speakers learning Italian L2 will be hypothesized (§ 4).

2. Description of the mutual interaction between morphology and prosody

2.1 German L1

A first useful differentiation in describing the processes that unite the prosodic and morphological levels in German is that between phenomena of a more properly phonetic-phonological nature influenced by morphological boundaries and morphological phenomena³. Among the latter, it can be further differentiated between processes affecting bound morphemes and those involving free morphemes⁴.

Regarding the first category, i.e. phenomena of a phonetic-phonological nature that interact with prosody based on morphological boundaries, the first phenomenon that plays a role in German is the final-obstruent devoicing [*Auslautverhärtung*], which consists of the devoicing process of all obstruent consonants in syllable final position. In this case, the phonetic realization of an obstruent phoneme depends on the syllabic positioning, creating a systemic (and thus phonological) alternation. However, this phenomenon cannot be explained as phonological alternation only: the morphological level also plays a significant role. Alternation between voiced and voiceless occlusives does not occur in the expected manner if – in addition to phonotactic positioning – certain morphological conditions exist. Significantly, the phenomenon of resyllabification – i.e. inclusion of a phoneme in an unexpected syllable in order to preserve the sonority hierarchy, which is a necessary condition for the persistence of the sonority feature in case of occlusives postponed from final position to the beginning of the following syllable – does not take place in case of addition of free morphemes, even if the resulting syllabic boundary consists of a cluster that would allow resyllabification. The permanence of the sonority trait due to resyllabification occurs only in the case of bound morphemes addition, in every case in which the sonority conditions provided by the sonority hierarchy are met⁵. Consider the following lexemes and their pronunciations:

³ In this study, every phenomenon dealing with the grammatical structure of a given word is referred to as morphological.

⁴ The difference between free and bound morphemes consists in their capability of standing alone: in particular, free morphemes are units of meaning that can be independent words in some contexts, whereas bound morphemes need to be attached to other (free) morphemes in order to convey meaning (Martini 2016, *inter alia*)

⁵ On this issue see also Cutugno et al. (2018).

- (1) *liebest* ['li:bəst] – *liebste* ['li:pstə] – *liebreizend* ['li:p,ʁaɪtsn̩t].

The first word is the second person singular of the verb *lieben* [to love], conjugated in the present form of the *Konjunktiv I* [subjunctive]; the second case refers to the superlative form of the adjective *lieb* [dear, beloved]; the third lexeme is again an adjective, in its base form [charming].

With regard to the pronunciation of these lexemes, it can be appreciated how, in the first two cases – that is to say, when the final obstruent is followed by a bound morpheme – the resyllabification depends solely on the phonotactic context: the labial sound plosive [b] resyllabifies, retaining the [+voiced] trait, when followed by a vowel; when, on the contrary, it is followed by other sounds that do not allow the resyllabification process in the onset of the next syllable due to sonority constraints, the plosive remains in the coda of the stressed syllable and undergoes devoicing.

In the third case, on the other hand, although the plosive could – from a phonotactic point of view and respecting the scale of sonority – be resyllabified in the next syllable (as in *liebest*), the presence of a morphological boundary between the two lexical (free) morphs *lieb-* and *-reizend* causes the plosive to remain in the coda of the syllable ['li:p], losing the [+voiced] trait as a result of the final-obstruent devoicing. So, while in the connected speech chain the final, normally devoiced consonant could theoretically latch onto a vowel or another subsequent consonant (with a lower degree of sonority), this process is mediated by the presence of a very specific type of morphological boundary, i.e. that between (free) lexical morphs. In this way, the prosodic boundary (final position or *Auslaut*) and its phonetic realization do not depend only on phonotactic principles: in fact, the existence of a contextual morphological boundary interacting with the prosodic one must be considered. In this sense, the morphological level turns out to be relevant to the prosodic chain with respect to syllable division, and hierarchically superior to the phonetic/phonological level in the application of the final-obstruent devoicing process. This kind of hierarchical 'predominance' of the morphological boundary, which is effective only in case of addition of free morphs, i.e. in case of composition, could be intended to avoid a blurring process [*Verdunkelung*] of the compound: in this way, in fact, the two lexical roots would remain separated and thus transparent, facilitating the communicative process.

The same function of safeguarding semantic transparency has been attributed to another process in which the morphological and prosodic levels are mutually influenced, namely the presence (or absence) of linking elements, called *Fugenelemente* in German (Wegener 2003, 449)⁶. The first question asked in the main works investigating *Fugenelemente* concerns the intrinsic nature of these segments. Some approaches analyze them as morphological (Ramers 1997; Gallmann 1998; Fuhrhop 1996; 1998; 2000). Indeed, compounds constituted through connecting elements, i.e., with *Fugenelemente* at the boundary between two lexical constituents, are traced back diachronically to lexicalized syntactic units with genitive attribute (Demske 1998; Fuhrhop 1998), "from which they arose"⁷ (Grimm

⁶ See also Kopf (2017).

⁷ From the original *aus welchen sie erwachsen sind*. If not otherwise specified, translations are provided by the author.

1878, 588). Other linguists (e.g., Wiese 1996; Donalies 2003) agree in considering linking elements closely related to inflectional morphemes, since in some cases they can be paraphrased using genitives or plurals. However, various works on the semantics of compounds conclude that “compounds generally display an indefinite quantification [...] even if the quantitative difference between singular and plural is recognized as necessary”⁸ (Fanselow 1981, 132). Actually, in the synchronic analysis of the *Fugenelemente*, many of the cases do not respect – from a semantic point of view – the singular or plural of the genitive case, in ways that cast doubt on the exclusively morphological nature of these structures. If we consider, for example, the lexemes *Sonnenschein* [sunlight/sunshine] or *Brillenglas* [eyeglass lens], the form of the connecting element is unclear in the inflectional domain. For this reason, some authors have proposed a different interpretation: the synchronically relevant linking elements would arise from a process whereby they became grammaticalized over time in the function of connecting two lexical morphs, regardless of the semantics of the compound (Eisenberg 2020, 230–231). In this sense, then, they would no longer have inflectional matrix in synchronic perspective.

Other authors propose that linking elements have a phonological nature (Nübling, Szczepaniak 2008), with a fundamental prosodic and articulatory function (Wegener 2003, 446; Kürschner 2003): in these approaches, these segments – similarly to other epenthetic elements – give the compound a better form than it would have without the connecting element, where ‘better’ refers to both the metrical structure and the semantic transparency of the compound. German linking elements would then serve the purpose of recreating, in as many complex lexical structures as possible, the preferred metrical structure of German, namely the trochee (Eisenberg 2020). For this reason, all non-trochaic roots would be suitable for adding linking elements [*fugenfreundlich*]; a non-trochaic root like *Hund* [dog], for example, is always expanded through a linking element in compounds, as shown by the words *Hundefutter* [dog food], *Hundebiss* [dog bite], *Hundefloh* [dog flea], *Hundedreck* [dog dirt], and so on⁹. Not suitable [*fugenfeindlich*], on the contrary, would be all trochaic lexical morphs with a closed final syllable and schwa or [ə] as the syllabic nucleus, or trochaic morphs with a tense final vowel (Wegener 2003, 452); for example, the words *Rentner* [pensioner] or *Auto* [car] avoid taking another morphological constituent, as they are already trochaic and end with a tense final vowel (*Auto*) or with [ə] (*Rentner*), + consonant (*Rentner*), as shown in the compounds *Rentnerheim* [retirement home] or *Autobahn* [highway]. The addition of a linking element, in these cases, would in fact cause a syllabic structure prosodically not expected in German (see the ungrammatical forms **Rentnernheim* and **Autosbahn*).

⁸ From the original *Komposita(strukturen) generell indefinite Quantifikation enthalten [...] wobei wir aber die Unterscheidung singuläre vs. pluralische Quantifikation als notwendig erkannten*.

⁹ It has to be added here that some non-trochaic roots do not take a morphological adjunct in compounds. Mostly, this happens if the whole compound is trochaic, see for example words like *Zeitgeist* [spirit of the time] vs. **Zeitengeist* or, noticeably, *Kindbett* [postpartum period] vs. *Kinderarmut* [child poverty] or *Kinderarbeit* [child labour].

These elements demonstrate a diachronic evolution of a morphological kind, in which inflectionally bound morphemes, shaped by the function of explicating grammatical relations such as possession (in case of genitive) and quantity (in case of plural), have over time assumed a completely different function through a process of grammaticalization of the function itself: from a synchronic point of view, linking elements can no longer be exclusively analyzed as morphological units; they play an important prosodic-articulatory role too.

Another process in which the addition of bound morphemes affects the prosodic structure in German is related to the concept of reduction syllable. In German, unstressed syllables provide for a general articulatory reduction; this process is stronger in presence of morphemes of grammatical kind or whose positioning and/or behavior is easily predictable based on context. For example, in disyllabic lexemes with inflectional morphemes at word endings, the unstressed syllable – if it is predictable from contextual morphological information – is vastly reduced in articulation. In such cases, it is even possible to elide the reduced vowel, i.e. the schwa, and it is usually a sonorant that takes the role of the syllabic nucleus. The phonemes [m, n, ŋ, l] can thus constitute the nucleus to keep the rhythmic structure intact. In fact, despite the possibility of vowel reduction, which can extend to complete elision in certain morphologically predictable syllables, acoustic duration is mainly subject to the influence of prosodic (e.g. boundaries and accentuation) and linguistic (e.g. informational status) factors (Yuen et al. 2024). In those cases, then, morphologically expected inflections are prone to prosodic weakness, which in turn appears as articulatory reduction. For example, verbal infinitive forms like *essen* [to eat], *lieben* [to love], *trinken* [to drink] are normally pronounced [ˈɛsn̩] – [ˈli:bŋ] – [ˈtʁɪŋkŋ], with the sonorant serving as syllabic nucleus, because the morphological adjunct is predictable from the context.

So far, the morphological processes linked to the prosodic system of German have been explored with specific regard to so-called bound morphemes (i.e. all those morphemes that do not possess structural independence). Now the focus switches to processes that are relevant from a prosodic perspective and are based on the functioning or transformation of free morphemes only.

The first interaction between free morphemes and prosodic functioning is lexical stress placement. Lexical morphemes – as such – are endowed with a definite accent position in the lexicon. The core vocabulary [*Kernwortschatz*] of German consists largely of morphologically simple lexemes, the root of which consists of a single (lexically stressed) syllable, possibly inflected through grammatical morphemes that cannot be accented (see words such as *Häuses* [house, gen. sing.], *Kindern* [children, dat. pl.], *schönem* [beautiful, dat. sing., m. or n.], *essen* [to eat]). Consequently, lexical stress also has the function of root identification in the native core vocabulary of German (Eisenberg 2020, 148). Regarding monosyllabic words, there are categorical differences between nouns, adjectives and verbs, which depend on the structural features of the various types. Nouns, for example, have the trochee as a necessary accentual condition for the formation of the plural; the singular gen-

itive can be trochaic for many noun classes¹⁰, but it is obligatory that it be so in the case of n-declension [*N-Deklination*], evident in case of the noun ‘human’ (*des Menschen* [human, gen. sing.]). The dative case often inflects without the addition of syllabic morphemes, even in the plural, as illustrated by the expression *den Kindern* [child, dat. pl.]. Adjectives are usually monosyllabic in their base form (*schön* [beautiful]); all inflected forms are disyllabic (*schönen, schönem, schönes, schöner, schöne*) and therefore trochaic. The dactyl has its own function within inflected comparatives (*schöneres, schönerem*, etc.). As for the superlative, it is composed in the analytic form (*am schönsten*); however, its inflected forms are again trochaic (*schönsten, schönstem*, etc.).

The verb is characterized by great heterogeneity, due to the different possible forms of tense, mode, diathesis, number and person and to the different morphological realizations of all these categories. Firstly, inflectional morphemes are constituted by voiced or unvoiced consonants (-t, -st, but also -n); at the same time, inflectional forms can be realized through vowel alternation (the so-called *Ablaut* [apophony]). Both strategies lead – in most cases – to a monosyllabic verbal form. In general, many forms of the present indicative, but also of the past tense of strong verbs, can be said to alternate between monosyllables in singular forms and trochees in plurals (except for the singular first-person). In strong verbs, another key feature is the leniency of consonantal geminates in the unstressed part of the trochee, in case of verbs whose root ends in [s]. An illustration is provided by the verb *reisen* [to travel] conjugated in the second person singular *du reist/ *reisst* [you travel]. Other verbs display the epenthetic insertion of -e- in case of verbs whose root ends in -t, -d, -m, -n, as in the pair *warten* [to wait] – *du wartest* [you wait].

In case of plurisyllabic forms, one must differentiate between morphologically simple lexemes [*Simplizia*], derived lexemes [*Suffigierte Stämme*] and compounds [*Komposita*].

Plurisyllabic *Simplizia* tend to be trochaic in German. In nouns with schwa or unreduced vowel in the second syllable, inflected forms always remain disyllabic (*Hase-Hasen; Auto-Autos*). In particular, in case of unreduced vowel in the second syllable, the only accepted inflectional morpheme is the -s, indicating genitive and plural in masculine and neuter, plural in feminine. Adjectives with unreduced vowel in the second syllable of the root have neither inflectional nor comparative forms, but only superlatives (see *lila* [purple] – **lilaes* – *lilastes* [purplest]). In case of verbs, again, trochaic forms represent the majority; dactyl is provided in the singular forms of the present indicative of verbs ending in -ern and -eln (*ich segele*¹¹) or in the preterit past tense (*wartete* – *kümmerte*, etc.).

As far as derived forms are concerned, the entire apparatus of native derivational suffixes within the German lexicon is neutral with respect to stress [*betonungsneutral*]: with the only exception of -ei and -erei, in fact, the suffixes derive new formations that retain the accent in its original position (see, for example, the words *stressig* [ˈʃtʁɛsɪç], *Bildung* [ˈbɪldʊŋ], *Heiterkeit* [ˈhaɪtɛkaɪt], *Wissenschaft* [ˈvɪsnʃaft], *Schmetterling* [ˈʃmɛtɐlɪŋ]). In gen-

¹⁰ When this is not the case, they do not follow another metrical pattern instead (e.g. iambic). Rather, some nouns can remain monosyllabic in the singular genitive, as for example *des Korn*s [corn, gen. sing.].

¹¹ In addition to the form given, it is also possible to say *ich segle*, thus safeguarding the trochaic structure.

eral, suffixes with reduced vowel cannot constitute a foot on their own, while those with unreduced vowel, in some cases, do.

Compound words are a morphological category whose interactions with prosody are rich and articulate. First, they can be distinguished into simple and complex compounds [*einfache und komplexe Komposita*]: the former are composed of two lexical morphs, the latter of more than two roots. In simple compounds, each of the two lexical morphs receives the expected stress; however, only one of the two parts gets the lexical stress of the compound, *i.e.* the primary stress [*Hauptakzent*]. In the most common case of compounding, *i.e.*, determinative compounding (Eisenberg 2020, 155), the compound accent usually falls on the first root, *i.e.*, the one placed on the left. This type of accent is the prosodic correlate of the semantic relationship between *Determinans* and *Determinatum*: for example, in the German compound *Schultasche* [school bag], the primary stress falls on the lexeme *Schul(e)* [school], which specifies which type of bag is being spoken of. In these cases, a paradigmatic relation between various possible determiners is prosodically grammaticalized (in relation to the proposed example, see the compounds *Schultertasche* [purse, bag, *Schulter* = shoulder] or *Handtasche* [handbag]). The other part of the compound, which retains its lexical stress, will then have an accentual degree higher than zero accent [*Nullakzent*] (which is typical of reduced syllables): this is the so-called secondary stress [*Nebenakzent*]. The attribution of primary and secondary stress has been subject of debate, especially in the literature related to the autosegmental-metrical approach (Pierrehumbert 1980; Ladd 1996). The main problem concerns the attribution of accents either morphologically (based on the internal structure of the compound) or prosodically (based on possible feet within the compound). In general, where organic and coherent behavior between the two levels is not possible, accents follow a primarily morphological and morpho-lexical attribution. An example of this can be found in the word *Türangel* [(door-)hinge], pronounced [ˈtyːɐ̯ˌʔaŋ], in which two accented syllables are placed immediately next to each other, since a morphological boundary intervenes between them.

Copulative compounds¹² – *i.e.* compounds in which both roots equally contribute to the final meaning of the lexeme, *e.g.* *Dichterkomponist* [poet composer] – are reported to display primary stress on the second root (Hirschfeld et al. 2007, 2206). In this case, stress position would signal the markedness of the morphosyntactic structure, which is not determinative as usual.

As for complex compounds, that is, those that contain more than two lexical morphs, the morphosyntactic structure of the compound is crucial for the placement of primary and secondary stress. In particular, the accent is placed according to the semantic relationships between the various lexical morphs within the complex unit. The first possible structure is called *Linksverzweigung*: in this case, the first two morphological units within the compound are interpreted as a whole, and function as *Determinans*. If simple compounds tend to place the main accent on the element on the left, complex compounds are accented

¹² These compounds are also referred to as coordinative compounds (Raffelsiefen 2022, 14) or coordinative appositive compounds (Olsen 2015, 368–369). This notational change aims at distinguishing them from so called co-compounds (Wälchli 2005, 5; Arcodia 2018, 1198), also referred to as *dvandva*.

on the left side of the element on the left. For example, if in the compound *Taschenformat* [pocket size] the primary stress would have been placed on the *Determinans* *Tasche(n)*- and the secondary stress on the lexical morpheme *-format*, in the complex compound *Westentaschenformat* [vest-pocket size] the main accent falls on the left part of the lexeme *Westentasche(n)*-, and specifically on the syllable [vest].

The second possible structure works oppositely and is called *Rechtsverzweigung*: in this case, the morphosyntactic relations within the compound are marked and indicate a semantic relation other than the *Determinans-Determinatum* pair (as in copulative compounds). Regarding the prosodic organization of these cases, in compounds whose right-hand side is strongly lexicalized (Giegerich 1983; 1985; Benware 1987) the main emphasis is nevertheless on the left-hand side, since the second part is perceived as a single unit (e.g. *Studentenwohnheim* [residence hall], pronounced as [stu'dentŋ,vo:nhaɪm]). In cases where, on the other hand, the right-hand part is morpho-syntactically branched, and thus becomes morphologically 'heavy', the main accent is channeled to the first syllable of the rightmost compound (see, for instance, *Universitätsfrauenklinik* [University Gynecological Clinic], pronounced as [univɛʁzi'tɛ:t'fʁaʊənkli:nɪk]). In these cases, the prosodic level would fulfill the function of signaling the markedness of the morphosyntactic structure again.

The last possible structure is ambivalent in nature: some compounds, in fact, have two possible interpretations, one with *Links*- and one with *Rechtsverzweigung*. If we consider, for example, the compound *Rotweinglaskiste*, it could indicate either a *Kiste* [box] for *Rotweingläser* [red wine glasses] or a *Glaskiste* [glass box] for *Rotwein* [red wine], depending on whether the lexeme *Glas* belongs to the left or the right part of the compound. The placement of the main stress in these cases aids semantic disambiguation; the process is referred to as *beidseitige Verzweigung* (Harsányi 2023, 39–40) or *doppelte Akzentuierbarkeit* (Eisenberg 2020, 157). In general, the interpretation of these structures is related to a process of disambiguation that also relates to the semantic level, which requires a correct decoding of the morphosyntactic structure; this decoding also takes place on a prosodic basis, and specifically through the placement of the primary and secondary stress within the compound. In the above-mentioned example, in fact, the secondary stress would be placed on two different syllables depending on the intended meaning (see ['ro:tvainɡla:s,kɪstə] vs. ['ro:tvain,ɡla:skɪstə]).

The last domain in which prosody and morphology interact in German is that of nicknames [*Spitznamen*], abbreviations [*Abkürzungen*], reduplication [*Reduplikation*]. In all these processes new lexical morphemes are created in a somewhat reduced way with respect to the original form, respecting prosodic constraints. The trochee is a crucial structure for all three phenomena. This can be observed in the following examples (Féry 1997; Kentner 2017; 2022): *Jojo* serves as nickname for the name *Johannes*; the form *Uni* is used as abbreviation of *Universität* [university]; trochaic reduplication can be noted in the words *Schickimicki* [jet-setter] from *schick* [chic] and *Mischmasch* [mishmash] from *mischen* [to mix].

2.2 Italian L1

In this section, the interplay between morphology and prosody is described with specific regard to the Italian language. Also in this case, it will be differentiated between phenomena of a more properly phonetic-phonological nature influenced by morphological boundaries and morphological phenomena.

Regarding the first group, the first relevant phenomenon is the insertion of the epenthetic vowel in various phonotactic contexts of Italian spoken productions. This phenomenon is quite significant in Italian: some papers suggest that epenthetic vowels are of 18 different types in Italian, and that the insertion of these phonemes is influenced not only by phonology, but by phonetics and morphology as well (Repetti 2012, 183–4). Among the most widespread, the phonological epenthetic vowels [e, ə] would be inserted in non-standard varieties of Italian after word-final consonants in loans¹³; these vowels would be the result of the articulatory release of the preceding consonant and would be explained by the strong prosodic tendency to trochaic structures with final unstressed vowel (see also Grice et al. 2018). Examples of this process can be found in the Italian loan-words *chat* [chatroom], *blog* [blog], *web* [Internet], possibly pronounced as [tʃatə], [blogə], [webə].

The phonological epenthetic vowel [i] would be the default option in non-final position, as shown in words like *Dio* [God] or *psicologo* [psychologist], pronounced *iddio* [i'd:io] or *pisicologo* [pisi'kologo] in some cases, or in the expression *per iscritto* [in writing]. On the other hand, [o, a, e] would be selected for morphological reasons with consonant-final borrowed nouns and adjectives. These phonemes, indeed, would function as word markers which allow the borrowed noun or adjective to be integrated into a declension class, thus for mainly morphological reasons (*billo* from bill; *bistecca* from beef steak; *businessse/busillisse* from business¹⁴).

Finally, [o] would be the vowel used at the end of a morphological domain (word or prefix) when no inflectional interpretation is needed, as for example in the word *idrofuogo* [water-repellant], from the Greek prefixoid *idro-* plus the Latin suffixoid *-ifug* (Repetti 2012, 183).

In short, when the epenthetic vowel is inserted in non-word-final position, its insertion is namely of an articulatory nature, as [i] is inserted to facilitate articulation – in addition to sonority reasons. When the epenthetic vowel is inserted in word-final position instead, its nature is influenced by both prosody and morphology, depending on the inflectional structure of the analyzed word: if it needs to be integrated into a declension class, it will select [o, a, e]; otherwise, schwa vowels will be preferred.

With respect to phonetic-phonological processes influenced by morphological boundaries, a relevant phenomenon is the so-called *troncamento* [truncation], i.e. a process – generally considered of phonological nature – that deletes a word-final mid-vowel

¹³ Word-final epenthetic vowels are often referred to as paragogic vowels (Hall 2006), as they have a phonological role in some cases. In Italian, for example, they can cause the lengthening of the preceding consonant, like the word stop pronounced as [stəp:ə].

¹⁴ Examples taken from Danesi (1985), as cited in Repetti (2012).

(/c/, /o/) appearing after a sonorant consonant (/r/, /l/, /n/, /m/) and before another vowel or consonant (Meinschaefer 2005; Nespor 1990)¹⁵. It is mostly an optional process but applies obligatorily in a few lexicalized constructions (see *similpelle* [leatherette] *vs.* **similepelle*) and in case of infinitive forms before enclitic pronouns (see *mangiarlo* [to eat it] *vs.* **mangiarelo*). The frequency with which this phenomenon takes place arises with the increasing of speech rate; moreover, it is more widespread in colloquial rather than in formal speech (Berruto 1987, 33, 151). Most importantly for the purposes of this paper, it can occur both between words and word-internally (that is to say, between lexical morphemes). Nespor (1999) considers it to be a hybrid process that takes place between prosody and lexicon, as – from a synchronic perspective – it applies productively to verbs only. However, Meinschaefer (2005) provides a descriptive analysis of the phenomenon and displays its application in several different contexts¹⁶ that exceed the verbal one: in fact, it applies obligatorily to verbal infinitives followed by enclitic pronouns, to infinitives of modal auxiliary forms like *dovere*, *potere*, *volere* [must, can/be able to, want] followed by another infinitive form (*voler volare* [want to fly] *vs.* **volere volare*, *poter saltare* [can/be able to jump] *vs.* **potere saltare*, etc.), to other infinitives in phraseological contexts (e.g. *fare in far di conto* [keep accounts] and *far sentire la propria voce* [make yourself be heard]), to all adjectives in -e when followed by the suffix -mente (*regolarmente* [regularly] *vs.* **regolaremente*), to title nouns when followed by another noun (*il signor Rossi*, *il dottor Bianchi* [mister Rossi, doctor Bianchi] *vs.* *il *signore Rossi*, *il *dottore Bianchi*); in a number of other cases, its application is optional (see Meinschaefer 2005, 36 for further details). Interestingly, most cases in which this process takes place are neither lexical nor syntactic in nature, but morphological: except for infinitives followed by other infinitives and nouns followed by other nouns, indeed, all other occurrences take place within words and probably work as an indicator of the new morphological status of the components, which have undergone derivation, composition or have been lexicalized in a phraseological structure.

Another important phenomenon at the edge between lexicon, prosody and morphology is the so-called syntactic doubling [*raddoppiamento fonosintattico*]. In this sandhi process, unstressed monosyllables and a few disyllabic words – when ending with a vowel – trigger gemination of the following consonant (Waltereit 2004). In this paper, the details of the most appropriate framework of analysis for this phenomenon will not be discussed¹⁷; instead, all those lexicalized forms in which the phenomenon is now part of the morphological structure will be focused. This phenomenon can be explained in three ways (Sholkamy Abdelgawad 2016): a) the diachronic fall of the final Latin occlusives; b) the extension by regressive assimilation of the fallen consonant to the initial consonant of

¹⁵ This phenomenon is traditionally distinguished from elision (as already stated in Leone 1963; Manczak 1967) – which takes place only before a vowel and never applies within verbal constructions, as the ungrammatical form **avet'interrotto* exemplifies (Meinschaefer 2005, 4) – and apocope – in which the deletion process involves an entire syllable in word-final position (Marotta 1995).

¹⁶ See also Meinschaefer (2006; 2009) for further considerations on Italian *troncamento* and its domain of application.

¹⁷ On this matter, different authors have considered this phenomenon as syntactic (Napoli, Nespor 1979; Nespor, Vogel 1982; 1986) or not syntactic, despite its name (Absalom 1995; Absalom, Hajek 1997; Absalom et al. 2003; Agostiniani 1992; Bertinetto 1985; Hurch 1986; and, most noticeably, Vogel 1997).

the following word and c) the fact that Italian phonotactics does not admit the sequence short vowel – [+ *tenuis*] consonant (*La piccola Treccani*, 1996, *linguistica*). These steps can be practically observed in the phonological changes within some words in their transition from Latin to Italian: the dropping of the proclitic ending and the doubling of the initial consonant of the following word appears in the diachronic evolution also word-internally (e.g. Italian *ammettere* [to admit] from Latin *admittĕre*). If we consider the Italian complex words *dappertutto* [everywhere], *davvero* [really], *dabbene* [respectable], *daccanto* [beside], *daccapo* [from the beginning], *dacché* [since], *avverare* [realize], *assennatamente* [sensibly], *assoldare* [recruit], *assicurazione* [assurance], *appiedato* [left with no transport], *affaticato* [tired], *soprattutto* [above all], *sopraffatto* [overwhelmed], *sopraggiungere* [show up], *sopressedere* [overlook], *soprattassa/sovratassa* [surtax], *suddetto* [above-mentioned], *laggiù* [down there], *quaggiù* [down here], *oppure* [or], *ovvero* [otherwise], *evviva* [hurray], *eppure* [yet], *neppure* [either], *treppiede* [tripod], *tressette* [tressette], *contrappeso* [counterweight], *contrappunto* [counterpoint], *cosiddetto* [so-called], *macché* [not at all], *dammi* [gimme], *vammi* [go somewhere for me], *dimmi* [tell me]¹⁸, and many others, it seems clear that the phenomenon of syntactic doubling is quite widespread in the morphological domain, as a result of lexicalization processes. However, it remains a mainly rhythmic and prosodic process (Repetti 1991; Loporcaro 1997), that has had a widespread influence on a certain type of compound formation in Italian.

Another phenomenon in which the prosodic structure is influenced by morphological boundaries in Italian is the intervocalic s-voicing. Some authors have recognized the interplay between prosodic and morphological elements with respect to this process already at the end of last century (Bertinetto 1999a). Krämer (2003, 1) analyzes two varieties of Italian (Tuscan and Lombardian) and states that /s/ is always pronounced as voiced in intervocalic position, while it is voiceless in clitics and at word margins (*a[z]ola* [button-hole] *vs.* *lo [s]apevo* [I knew (it)]). As regards prefixes, if the /s/ is the final consonant of the prefix, it is realized as voiced when followed by a vowel-initial stem; quite interestingly, stem-initial /s/ is pronounced as voiceless when preceded by a vowel-final prefix (*a-[s]ociale* [misanthropic] *vs.* *di[z]-onesto* [dishonest]). The author hypothesizes that this phenomenon takes place “only in case of a mismatch between morphology and prosody, i.e. if the prosodic and morphological edges do not coincide” (Krämer 2003, 23). In this sense, /s/ would remain voiceless in all positions in which it needs to signal a morphological boundary, and thus, the correct meaning; in particular, when it demarks the beginning of a lexical morpheme or of a lexeme. Then, the /s/-voicing is interpreted as a signal for a mismatch in a place which is highly relevant for correct parsing¹⁹.

The last two phenomena to be discussed are prosodically governed morphological processes that affect free morphemes. Namely, reference is made to shortenings [*accorciamenti*] and formation of hypocoristics. Both processes are related to the concept of minimal nom-

¹⁸ For the cited example see Istituto Geografico De Agostini (2011, 24); Ilardi, Bocchiola (2003, 77). For more etymological information see also Gradiš (2007).

¹⁹ The reader is referred to Krämer (1999; 2001) for a similar discussion of this matter in Breton and German.

inal prosodic word in Italian, which – as stated in Thornton (1996, 83) – is disyllabic, ends with a vowel and consist of a trochaic foot.

Shortenings regard the truncation of polysyllabic words to a trochaic disyllabic unit ending with a vowel sound. Italian words can be shortened in two different ways: firstly, they can be truncated on a morphological boundary; the second truncation type does not rely on morphological units, as the following examples show: *auto* [car] for *automobile* (first type) *vs.* *bici* [bike] for *bicicletta* [bicycle] (second type) (Thornton 1996, 87). Both shortened forms can undergo inflection, derivation and compounding processes, thus confirming their morphological status. On the semantic level, they usually maintain the same meaning of the original form, although sometimes it can be modified (*pala-* from *palazzo* [building] in words as *palasport* [indoor sports arena]).

As regards hypocoristics, they can be very similar to shortenings (for example *Vale* for *Valentina*); however, they can also have a different structure, as they can consist of the two final syllables of the base instead of the first two (*Tore* for *Salvatore*). In Thornton (1996, 102) it is supposed that the second ones derive from the rightmost foot of the base.

Both shortenings and hypocoristics reveal the importance of trochaic forms in Italian, as the minimal prosodic word is said to be based on this foot. However, the notion of minimal nominal prosodic word is amended by Itô and Mester (2015) through the idea of perfect word, which consists of the perfect alignment between the edges of the prosodic word and the optimal foot (Krämer 2018). The perfect word does not only impose a minimum size, but also an upper limit to shortened forms. In both approaches, prosodic considerations are vital for understanding the way in which Italian words are shortened, or hypocoristic forms are created.

3. German and Italian: similarities and differences in the interplay between prosody and morphology

As results from the previous sections, many processes at the intersection between prosody and morphology can be explained cross-linguistically in similar ways. For example, both the final-obstruent devoicing in German and the /s/-voicing in Italian, although exactly specular on the phonetic-phonological side, can be treated as an important indication of morphological boundaries, as they take place only under precise morphological conditions regarding the position of the phoneme with respect to the morphological boundary²⁰. Both are then interpreted to be a signal of the correct parsing and would serve the common aim of preventing misunderstandings in the perception phase.

In case of nicknames, abbreviations, reduplications in German and of shortenings and hypocoristics in Italian, morphological units are modified (and new lexical morphemes are created) based on prosodic constraints. With respect to these processes, the crucial role of trochaic feet is underlined in both languages.

²⁰ On this issue see also Bertinetto 1999b.

However, significant differences were also identified in the analyzed languages. Firstly, in both languages, phenomena of phonological insertion were described; nonetheless, they have a quite different motivation. In German, attention was paid to linking elements, which – from a synchronic point of view – can no longer be analyzed as morphological units but play an important prosodic-articulatory role of safeguarding the preferred trochaic foot. In Italian, on the contrary, the focus was put on insertion of epenthetic vowel, and particularly on word-final epenthetic vowels. They have been said to safeguard the trochaic foot in Italian, too, but exclusively with loans ending with consonants that do not need to be inserted in a declension class. In all other cases, their nature is influenced by morphology, as they play a key role in deciding the inflectional structure of the word.

The remaining processes analyzed for German are reduced syllables and lexical stress placement. In a sense, they are two sides of the same coin: indeed, they reinforce the role of stress placement in the rhythmic organization of German, with different degrees of prosodic relevance (primary, secondary and zero stress) associated with different syllables, whose phonetic shape, in turn, strictly depends on morphological and prosodic conditions. German vowels behave very differently if they are part of a stressed syllable or not: in the first case, they attract complex consonant clusters and vary in quantity in a phonologically relevant way; in the latter, they are strongly reduced, sometimes even deleted, with a sonorant taking the role of syllable nucleus. In compounds and complex words, phonetic and prosodic aspects linked to the vocalic segment indicate both primary and secondary stress and indirectly help revealing semantic characteristics.

The Italian phenomena of truncation and syntactic doubling, on the contrary, see a substantial stability of vowel sounds from a phonetic point of view. Vowels are deleted in the first case in order to indicate the new morphological status of the components. In the second case, it is the consonantal phonemes that are geminated in certain prosodic (mainly rhythmic) conditions, and this phenomenon originated diachronically from a phonetic modification of a morphological unit.

As regards the differences noted between the prosody-morphology interface in German and Italian it can be said that, in German, the interplay between prosody and morphology is governed by the high relevance of prosodic structures that serve as constraints for morphological processes: the rhythmic structure shapes the phonetic realization of vocalic sounds in unstressed syllables, which – in turn – are related to morphologically predictable units (e.g. inflectional morphemes). In Italian, by contrast, morphology seems to play a more important role (see the phenomena of truncation and /s/-voicing, partially also syntactic doubling): vowels are truncated and /s/ is voiced (or not) in order to reflect different morphological statuses; even the phenomenon of syntactic doubling reflects a diachronic evolution of morphological units under certain prosodic conditions.

4. Acquisition of Italian L2 in German native speakers: some hypotheses

Learners develop an interlanguage by incorporating elements of their first language in their L2 processing (Gass, Selinker 1992). The transfer of constraints from the first language

(L1) makes it challenging to create accurate representations for second language processes that depend on the complex interplay between prosody and morphology, often resulting in a somehow flawed L2 prosodically shaped morphology. This assumption is crucial in the Prosodic Transfer Hypothesis (Goad, White 2019), in which the interplay between prosody and morphology is seen as crucial in the acquisition of a foreign language. In this respect, some hypotheses on possible transfer processes that should be significant for German native speakers acquiring L2 Italian will be formulated. They are based on previous consideration and description of the German and Italian prosody-morphology interface.

Firstly, it has been observed that a relevant phenomenon in Italian is the syntactic doubling. A great number of Italian compounds keep track of this phonetic change that recurs under precise morphological and prosodic circumstances. The main problem for German learners, in this respect, could be constituted by the consonantal gemination. Indeed, German and Italian share a similar syllable structure: syllables can consist of an onset, a mandatory nucleus and a coda. However, in German – unlike Italian – it is the vowel that can have different (phonologically relevant) quantity; while in Italian it is rather the consonant that is geminated. German syllables allow a wider range of sounds forming the nucleus, that can also be consonantal; moreover, it allows more complex consonant combinations, and consonant clusters are more common in German. Nonetheless, consonants are not relevant with respect to quantity. Probably, German native speakers will have some kind of difficulties producing syllables with consonant gemination in Italian: consequently, the phenomenon described as syntactic doubling is expected to be managed with great difficulties, or not managed at all, by German learners of Italian L2, especially with non-lexicalized forms (e.g. *a piedi* [on/by foot], normally pronounced [a'ppjedi] in Italian).

Secondly, both languages prefer trochaic feet, even if this tendency is clearer in German (Krämer 2009; Eisenberg 2020); however, the foot is the key prosodic unit in German, while this role is played by the syllable in Italian. From a rhythmic perspective, in fact, Italian displays a tendency towards the syllable-timed pole, while German is considered closer to the stress-timed pole²¹. Consequently, Italian is more likely to have a consonant-vowel (CV) structure with no vocalic reduction, even in unstressed contexts: in syllable-timed languages, full vowels in unstressed syllables are typically not reduced; on the contrary, German unstressed vowels are often reduced to schwa, as stressed-timed languages tend to have strong vocalic reduction processes in unstressed contexts. It is plausible that German native speakers will have difficulties producing the rhythmic pattern of Italian and managing to produce a stable syllable duration with no reduction of the unstressed vowels, above all in morphologically predictable contexts (as for example with grammatical morphemes, inflections etc.). In this respect, it could be hypothesized that disyllabic Italian words would most likely be produced by German speakers with a reduced vowel in the second syllable. In this sense, the different nature of hypocoristic forms in Italian – in which the first two syllable of a long word are retained, without reduction of the second, unstressed vowel – with respect

²¹ Because of space limitation, we do not wish to discuss here the limitations in Pike (1946) or Abercrombie (1967) and the rich debate on this issue.

to nicknames – that impose the repetition of the first (stressed) syllable – could also represent a challenge for German learners. The same would hold true for shortenings.

The rhythmic organization of German has some more consequences. Indeed, it is important for German speakers to avoid the production of adjacent weak syllables (traditionally referred to as lapse, Nespor, Vogel 1989): the trochaic alternance of strong and weak units has to be safeguarded in order to protect the preferred foot. In Italian, on the contrary, weak syllables in the prosodic context of lapse sentences are usually non-deleted: even if the trochee remains the most widespread rhythmic contour, indeed, it does not seem so significant as in German. This general tendency already begins in children's speech data: Italian and German children reflect what they have been exposed to, as Italian children are less sensitive to foot rhythm compared to German ones (Gwinner et al. 2012). Moreover, Italian and German bilingual children adjust their productions depending on the language they are using: they have no problems with lapses when speaking Italian, while they prefer no-lapse patterns and weak syllable deletion in lapse contexts while speaking German. In sum, bilinguals behave like monolinguals (Gwinner et al. 2012, 40). A certain tendency towards a different treatment of lapses in Romance and Germanic languages already emerged at the end of last century: for instance, Lleó and Demuth (1999) claimed that crosslinguistic variation in the emergence of grammatical function morphemes, with specific regard to determiners, can also be understood in terms of prosodic constraints. Indeed, children would introduce monomorphemic words in their speech depending on the way by which determiners are 'prosodified' in different languages, i.e. depending on the rhythmic context in which they appear: determiners that help creating the preferred foot (i.e. the trochee in German and, partially, Italian) will appear earlier with respect to those who do not respect this metric condition, that will most likely be omitted. Therefore, strong prediction can be made regarding the type of morphological units that are likely to be mastered depending on the operative prosodic constraints (Demuth 2001). In this sense, it is highly predictable that German native speakers would have a limited use of Italian grammatical morphemes, especially of determiners, because of the prosodic functioning of their mother tongue. For a German native speaker, it would be counter-intuitive to use determiners with Italian disyllabic words, as for example in *la pala* [the shovel]; the introduction of the determiner, in fact, involves a violation of an important prosodic constraint. In German, indeed, some determiners are produced in a reduced form, arguably with the purpose of maintaining a trochaic foot (see for example the expressions *zum Glück* [luckily] vs. **zu dem Glück* or *ans Meer* [to the sea], largely preferred to *an das Meer*).

The avoidance of lapse sentences would also play a role with respect to the truncation process. As discussed for the preceding examples, words are truncated by means of vowel deletion in some morphological contexts. However, very often the truncated vowel would also be relevant as lapse syllable. If we consider the above-mentioned examples *il dottor Bianchi* [doctor Bianchi] – *far di conto* [keep accounts] – *voler volare* [to want to fly] – *regolarmente* [regularly], we can expect that German native speakers would master with greater easiness the elision preventing lapses and promoting trochaic feet (as in ['fɑ:rdi'kon-

to]) with respect to those including one or more lapses, or even clashes (Nespor, Vogel 1989, e.g. [vo'lervo'lare], [ildot'tor'bjanki], [regolar'mente]).

At the same time, German learners could display a tendency towards the insertion of morphological material in complex words (previously referred to as linking elements) in order to provide for the maintenance of the trochaic foot: the insertion of epenthetic vowels, for instance, could be (erroneously) used for this purpose. Probably, the importance of epenthetic vowels for class declension in Italian would not be easily mastered by German learners, with following morphological mistakes in terms of inflection.

Another relevant aspect is stress placement in German and Italian. The trochaic foot, which has been recognized as the most widespread form in both languages, and relevant for the rhythmic organization of German in particular, results from a strong syllable followed by a weak one. The strong syllable is a stressed syllable. However, stress is realized in different ways in German and Italian. In Italian, the most important acoustic and perceptual correlate of stress is duration (Bertinetto 1980; 1981); duration seems to be very significant also for the perception of sentence accent (D'Imperio 2000). In German, on the contrary, the main correlates of stress are pitch movements, and a pitch accent is usually associated with the primary stressed syllable (Kleber, Klippfahn 2006, 1)²². In this sense, German native speakers will most probably have great difficulties both producing and perceiving stress in Italian L2: the produced correlates of stress in Italian could not be perceived by German learners, as they are not phonologically relevant in German L1. The mastering of the rhythmic chain, then, could fail because of the different modalities in which prominence is realized in the first place.

Besides, German is known as a *kompositionsfreudige Sprache* [literally, a language happy to produce compounds] (Gaeta, Schlücker 2012). *Komposita* are a relatively large domain of inquiry for the Germanic language. As we have seen, lexical accentuation in compounds is quite complex, and requires both a primary and a secondary stress. In such long German morpho-lexical units, moreover, if the primary stress is produced through a pitch accent, the secondary stressed syllable could entail a (phonologically relevant) long vowel. Italian, in contrast to German, has no distinctive quantity opposition between vowels. In this respect, then, German native speaker could misinterpret the semantic of complex Italian formation, as well as not being able to correctly master stress placement with different phonetic constraints²³.

5. Conclusion

In the preceding section, hypotheses have been made about the domains that – most likely – would not be mastered by German native speakers of L2 Italian. In sum, it is suggested that

²² For an in-depth analysis of acoustic correlates of primary and secondary stress both in German and in Italian, see Brugnoli (2024).

²³ It has already been showed that morphologically complex words are usually wrongly stressed when roles are reversed. This phenomenon has most frequently been observed among advanced Italian speakers of German (Bissiri, Pfitzinger 2009).

German learners of Italian L2 would encounter significative difficulties with the following elements: a) syllable structure with respect to consonantal clusters and vowel stability; b) rhythmic organization and functioning, with special regard to stress placement in simple and complex words; c) use of grammatical or functional morphemes, as for example determiners.

These findings are not entirely new; nonetheless, the present considerations could improve the learning process, if properly integrated from a didactic perspective. In order to corroborate the present reflections about possible difficulties in the acquisition of L2 Italian by German native speakers and related prosodic transfer processes, future work should thus firstly include an empirical verification of the hypotheses enucleated in this study and secondly encompass the didactic implications of the present reflection, proposing teaching strategies that could possibly smooth the way to the mastering of Italian L2 by German native speakers.

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