Some characteristics of English morphological blends

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1. Introduction

One out of many word-formation processes in English is known as blending. It can be roughly defined as the intentional coinage of a new word by fusing parts of at least two source words of which either one is shortened in the fusion and/or where there is some form of phonemic or graphemic overlap of the source words;[1] some well-known examples are given in (1).

(1)	a.	br(eakfast)	×	(l)unch	→	brunch
	b.	mot(or)	×	(h)otel	→	motel
	c.	fool	×	(phi)losopher	→	foolosopher

But apart from such cases, the word *blend* has also been used to refer to expressions resulting from production errors rather than from intentional coinages; examples include authentic speech-error blends and experimentally induced error blends as represented graphemically in (2) and (3) respectively.

(2)	a.	aggra(vates)	×	(intensi)fies	→	aggrafies
	b.	sh(out)	×	(y)ell	→	shell
(3)	a.	compuls(ory)	×	(oblig)atory	→	compulsatory
	b.	ill(ness)	×	(di)sease	→	illsease

Blends (both intentional and accidental) are omnipresent. It comes as a surprise, therefore, that apart from a variety of taxonomic approaches and blend collections (cf. esp. Pound 1914), there are only few studies addressing the question of what regularities, if any, govern the formation of blends (and many of them are based on fairly small samples). Three main kinds of approaches can be distinguished:

- some approaches are only concerned with intentional blends (e.g. Lehrer 1996, Kaunisto 2000, Kemmer to appear);
- some approaches are only concerned with speech-error blends (e.g. MacKay 1972, 1973, 1987, Laubstein 1999a, b);
- some are concerned with establishing correspondences between the two kinds of blends (Berg 1998) or at least seem to assume that there are enough commonalities to warrant generalisations covering both kinds of blends (e.g. Kubozono 1990, Kelly 1998).

The present study investigates aspects of two closely related questions: (i) why do intentional blends have the structure they have? and (ii) to what degree are intentional blends and speech-error blends similar to each other? The aspects singled out for analysis are the following:

- what determines how many elements (phonemes and/or graphemes) of each source word are fused into the blend, i.e. to what extent does the recognisability of the source words play a role?
- do different blend types differ with respect to lengths of source words?
- do different blend types differ in terms of frequencies of source words?

- how strong is the influence of similarity on blend formation and where does it apply?

These characteristics, their relation to blends and the way they are analysed here will be explained below in some more detail. Section 2 will present four case studies addressing these issues on the basis of a large corpus of blends and section 3 will conclude.

2. Case studies

2.1 Degree of recognisability

On the basis of a suggestion by Bergström (1906), Kaunisto (2000) suggests that

> [i]t may be argued that the deletion of any items from the source words presents a certain amount of 'danger' or 'threat' as to the understandability of the final blend word. Ideal blends then would naturally be ones where the ending of the first source word and the beginning of the second source one overlap, resulting in a way in no deletion at all. (Kaunisto 2000:n. pag.).[2]

He goes on to argue that, therefore, one would expect the shorter word to contribute a larger percentage of itself to the blend than the longer word to preserve its recognisability. For example, consider the blend *chunnel* (*channel* × *tunnel*) in Figure 1; the cross marks the breakpoint where the words are fused.

source word$_1$: *channel*				a	n	n	e	l	⇒ $^5/_7$ not in blend (=71.4%)
	c	h	×						⇒ $^2/_7$ in blend (=28.6%)
source word$_2$: *tunnel*				u	n	n	e	l	⇒ $^5/_6$ in blend (=83.3%)
		t							⇒ $^1/_6$ not in blend (=16.7%)

Figure 1: Individual contributions of *channel* and *tunnel* to *chunnel*: Analysis 1

With *chunnel*, Kaunisto's prediction is borne out: *tunnel* has fewer letters but contributes more of itself to the blend than the longer *channel*. What is more, Kaunisto shows that, of the 101 blends he analysed, 55.4% behave as predicted (while 16.8% do not; the remainder are blends in which both source words are present in their entirety and blends deriving from equally long source words).

Still though, there are some problems with this way of analysis. First, Kaunisto does not subject his results to standard tests of significance, leaving us with a great degree of uncertainty as to the generalisability of his result. Second, the question may be posed how Kaunisto approaches blends without a clear breakpoint or those where we find common graphemes (or phonemes) outside of the central overlap area around the breakpoint. The above example of *chunnel* is a case in point, which could also be analysed as represented in Figure 2.

source word$_1$: *channel*				a					⇒ $^1/_7$ not in blend (=14.3%)
	c	h	×		n	n	e	l	⇒ $^6/_7$ in blend (=85.7%)
source word$_2$: *tunnel*				u	n	n	e	l	⇒ $^5/_6$ in blend (=83.3%)
		t							⇒ $^1/_6$ not in blend (=16.7%)

Figure 2: Individual contributions of *channel* and *tunnel* to *chunnel*: Analysis 2

It is easy to see that this analysis contradicts Kaunisto's prediction.

Finally (and most importantly), Kaunisto's investigation is based on the graphemic contributions the source words make to the blend although most if not all researchers have rather emphasised the phonemic and phonological structure of blends.

Let us therefore test Kaunisto's hypothesis by investigating graphemic and phonetic contributions of source words relative to their graphemic and phonetic lengths in both ways of analysis. To that end, I will use a corpus of blends I am currently compiling (mostly from the research literature, but also from additional sources). This corpus is already one of the largest available, containing at present 988 intentional blends (plus 90 authentic speech-error blends and 34 experimentally-induced speech-error blends). Then, for each intentional blend, the analyses presented above in Figure 1 and Figure 2 were conducted, and the results for all 988 intentional blends are summarised in Table 1 to Table 4. All of the tables deviate highly significantly from those we would expect on the basis of a random distribution and the cells responsible for this effect contain plusses/minuses (depending on whether the observed frequency is higher/lower than the expected one); the numbers of plusses/minuses indicate the significance level of the cells' deviations from the expected frequencies as determined by a configural frequency analysis (cf. Krauth 1993).

which word is larger?	which word contributes more to the blend?			row totals
	=	source word$_1$	source word$_2$	
=	33 (++)	28 (--)	71	132
source word$_1$	26	29 (---)	252 (+++)	307
source word$_2$	70	332 (+++)	147 (---)	549
column totals	129	389	470	988

Table 1: Contributions × lengths of source words (graphemes; analysis$_1$; χ^2_4=290.2)

which word is larger?	which word contributes more to the blend?			row totals
	=	source word$_1$	source word$_2$	
=	34	25 (-)	63	122
source word$_1$	48	35 (---)	231 (+++)	314
source word$_2$	105	320 (+++)	127 (---)	552
column totals	187	380	421	988

Table 2: Contributions × lengths of source words (phonemes, analysis$_1$; χ^2_4=255.9)

which word is larger?	which word contributes more to the blend?			row totals
	=	source word$_1$	source word$_2$	
=	46 (+++)	29 (-)	57	132
source word$_1$	40	45 (---)	222 (+++)	307
source word$_2$	108	310 (+++)	131 (---)	549
column totals	194	384	410	988

Table 3: Contributions × lengths of source words (graphemes, analysis$_2$; χ^2_4=233.6)

which word is larger?	which word contributes more to the blend?			row totals
	=	source $word_1$	source $word_2$	
=	47 (++)	22 (--)	53	122
source $word_1$	58	45 (---)	211 (+++)	314
source $word_2$	125	316 (+++)	111 (---)	552
column totals	230	383	375	988

Table 4: Contributions × lengths of source words (phonemes, $analysis_2$; $\chi^2_4=243.9$)

The tables demonstrate that (i) shorter source words contribute more to the resulting blends (irrespective of the way of analysis) and (ii) there is a clear tendency for source $word_2$ to contribute more to the blend.

The first result overwhelmingly supports Kaunisto's hypothesis directly, and, interestingly, the second one does, too, though less directly: In intentional blends, the two source words usually contribute different portions of themselves: typically, the first word contributes its beginning whereas the second word its end. But note that, in general at least, x segments of the beginning of a word increase its chance of being recognised more than x segments of its end (cf. Noteboom 1981), given that the normal way we encounter words is from beginning to end rather than vice versa. Therefore, it makes sense that, if both source words are equally long, the second word contributes more because this would enhance its recognisability by compensating for the fact that it is not processed in the normal way. Thus, the tendency to maintain recognisability is supported in an additional way that Bergström and Kaunisto had not considered.

Finally, these findings and their interpretation are further supported. First, I also analysed the phonemic contributions of speech-error blends in the above way. The prediction was that, since recognisability should not play a role in the accidental formation of blends, none of the four bottom right cells of the tables should yield significant contributions to Chi-square. This was fully borne out by all of the 8 post-hoc tests (4 cells in two ways of analysis). Second, I have assembled a corpus of simulated blends by taking 6 pairs of words and fusing the two words of each pair in every possible way.[3] The by now familiar four analyses were conducted on the resulting 228 graphemic and 146 phonetic blends. The largest contribution to Chi-square is 1.362, which corresponds to a p-value of 0.24 (even without post hoc correction as above) and demonstrates that, as expected, recognisability plays no role in simulated blends. Thus, the above findings demonstrate that the recognisability of source words influences the structure of intentional blends and supports a hitherto unnoticed structural difference between speech-error blends and intentional blends.

2.2 Lengths and frequencies

Lengths and frequencies of source words of blends have been investigated in some detail. Space does not allow a detailed discussion of all the findings and their implications for previous works, so I must restrict myself to a few studies.[4]

Concerning the two-word intentional blends in English that can be expanded into coordinate phrases, Kelly (1998:582) claims that their first source words are significantly shorter and significantly more frequent than their second source words. Interestingly enough, for German speech-error blends the opposite was found by MacKay (1973:790f.): the first source words are significantly longer and insignificantly less frequent than the second source words. These findings shed further doubt on the assumption that the two kinds of blends are so similar to each other as argued for by, e.g. Kubozono (1990) and Berg (1998). I have therefore determined the graphemic, phonemic and syllabic lengths of all source words of all intentional and speech-error blends as well as the frequencies per million of the word forms of the source words in the British National Corpus. These data were then entered into two-factorial (M)ANOVAs (blend type × source word); the results are represented in Figure 3 and Figure 4.

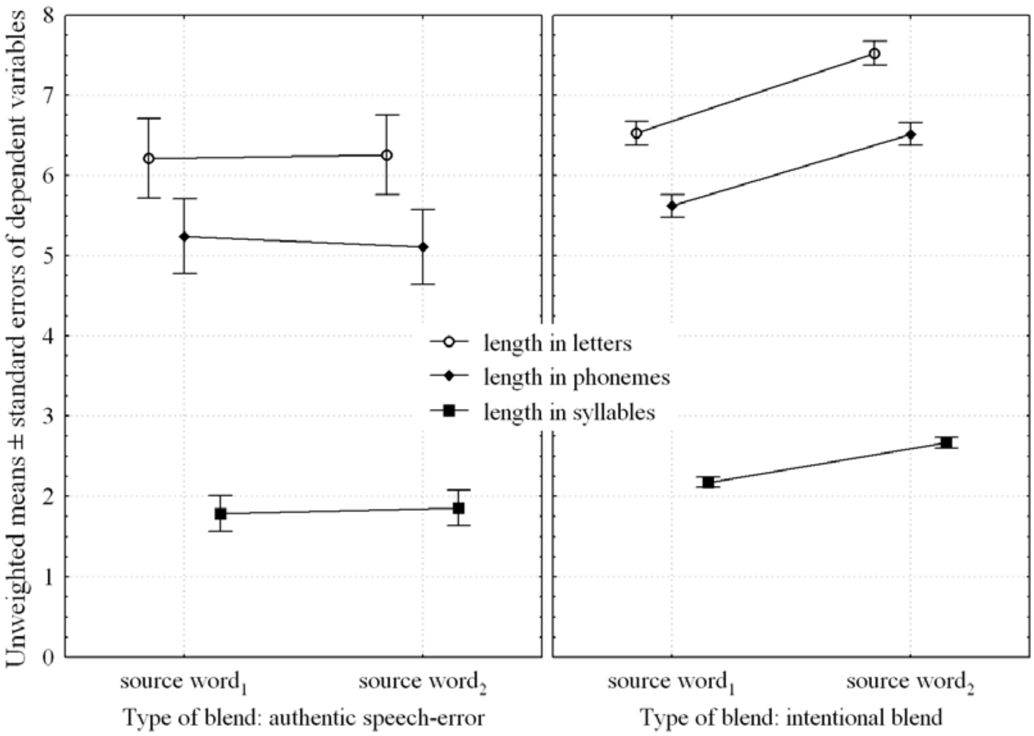

Figure 3: Blend × source word: lengths ($F_{3,\,2139}$=2.91, p=0.03)

Let us look at each (M)ANOVA separately. As to lengths, the two-way interaction is significant, i.e. the observed patterns are not identical. The results concerning lengths of authentic errors are, according to planned contrasts, completely insignificant: the two source words fused in speech-error blends do not differ in terms of their lengths at all, thereby contradicting MacKay's (1973) findings on German errors. The exact opposite, however, is found for intentional blends: in accordance with the data from Kelly's (1998) smaller corpus, source word$_2$ is highly significantly longer than source word$_1$ (again, according to planned contrasts). Thus, while it is not clear what exactly is responsible for the differences between MacKay's data and the present corpus, we can still conclude that both kinds of blends do not exhibit similar patterns.

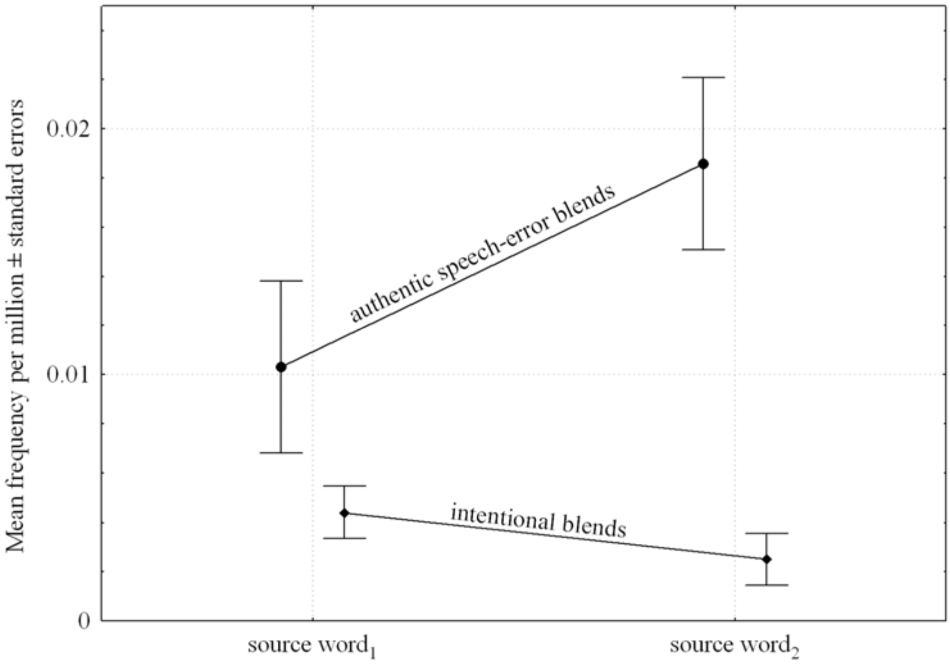

Figure 4: Blend type × source word: frequencies p.m. ($F_{4, 2152}$=14.89, p<0.001)

As to the frequencies, two results are relevant: first, we find that the two kinds of blends do behave very differently in terms of the main effect *blend type*: the words entering blend errors are significantly more frequent than those fused in intentional blends ($F_{2, 2152}$=69.57; p<0.001). Secondly, the interaction is highly significant, too. Contrary to MacKay's findings on German, the average frequencies of source words of error blends differ significantly (according to planned contrasts) such that source $word_2$ (i.e. the intruding form) is much more frequent than source $word_1$. As to intentional blends, the significant effect is in fact in the opposite direction (cf. Kelly 1998). We may therefore safely conclude that speech-error blends and intentional blends behave quite differently.

2.3 Similarity

Similarity is a notion that has long been brought to bear on both speech-error and intentional blends. For instance, it has often been noted that the source words entering into speech-error blends are

- phonologically similar (cf. MacKay 1987:34; Kubozono 1990);
- syntactically similar (i.e. they mostly belong to the same syntactic category; cf., e.g., MacKay 1987:34, Levelt 1989:217; Berg 1998:153);
- semantically similar (Levelt 1989:183f., 199f.; Kubozono 1990:3; Berg 1998:156f.).

At least to some extent, similar suggestions have been made for intentional blends. For instance, Kemmer (to appear, n. pag.) claims that

> [p]honological properties are highly relevant to blending: phonological similarity of the blend with part or whole source words

> increases the likelihood or felicity (the ‘goodness’) of a blend. Similarity can range from segmental identity through segmental similarity to same or similar syllable structure; and the similarity can range from identity/similarity of the blend with both source words, to one source word, or to parts of these.

Unfortunately, Kemmer neither cites any previous empirical studies nor provides own empirical evidence for her claim. In this respect much more laudable is Kelly’s (1998) study already referred to above. In his discussion of the playful character of intentional blends, he argues that the word-play character of many blends can be explained by appealing to the phonological similarity of the two source words that are fused in the blend. More precisely, phonological similarity is operationalised by investigating whether the phonemes at the break points of blends are more similar to each other than might be expected by chance. His example is the blend *clantastical* (*clandestine* × *fantastical*), where the /d/ at the boundary of *clandestine* is articulatorily similar to the first /t/ of *fantastical*, thereby increasing similarity. On the basis of his (unfortunately very small) corpus of 33 blends, this hypothesis is proven correct.

Once again, however, this technique is far from optimal. Consider Figure 2 above, where the application of Kelly’s phonemic analysis would boil down to assessing the similarity of [tʃ] in *channel* to the [t] in *tunnel* in terms of the sonority hierarchy; in terms of traditional articulatory features, we would conclude that the similarity is moderately high since [tʃ] and [t] share the feature [-voiced], are similar in terms of place of articulation ([+alveolar] and [+alveolar-palatal] respectively) while they differ in their manner of articulation ([+affricate] and [+plosive] for [tʃ] and [t] respectively).[5] The example makes clear that Kelly’s definition of similarity is overly narrow. *Channel* and *tunnel* are of course much more similar to each other than the comparison of segments at the boundary alone may suggest: (i) there is strong graphemic and phonemic overlap as represented in Figure 2 and (ii), when we also consider similarities in terms of articulatory features, both source words fit the pattern in (4), where “|” surround articulatory features of a single segment.[6]

(4) [-voiced] [+alveolar] | [-rounded] [-high] | [n] [ə] [l]

Similar arguments pertain to *clantastical*, where both source words also exhibit more similarity than Kelly’s operationalisation captures as is represented in (5), where underlining represents stress.

(5) C [æ] [n] | [+alveolar] [+plosive] | <u>[+front] [-rounded]</u> | [s] [t] [ɪ] C

Thus, a more adequate operationalisation of similarity is required, one that is (i) broad enough to accommodate naïve speakers’ perceptions of play with similarity, (ii) precise enough to test Kemmer’s claims and (iii) easy to apply. In what follows I will briefly discuss two approaches and their results.

2.3.1 The similarity of source words to the blend

A first way to investigate the influence of similarity is that referred to by

Kemmer, namely the similarity "of the blend with both source words, to one source word, or to parts of these." But how would such an appropriate quantification of the similarity of the source words to their corresponding blend look like? Intuitively and ideally, it would have to be a similarity index that is

- fairly high for cases like *chunnel*;
- fairly low for cases like *brunch*;
- fixed to a set interval of possible values (in order to be able to easily compare (means of) different values to each other).

I suggest to use the proportion of graphemes (or, by analogy, phonemes) each word contributes to the blend. Let me exemplify this procedure on the basis of the graphemes of *chunnel*. *Chunnel* consists of seven graphemes, six of which are contributed by the seven-letter word *channel* and five of which are contributed by the six-letter word *tunnel*. In other words, 85.7% of *channel* make up 85.7% of *chunnel* while 83.3% of *tunnel* make up 71.4% of *chunnel*. Multiplying the values for each source word, adding up these products and dividing the sum by two (since there are two source words), we obtain a similarity index (henceforth SI_G and SI_P for graphemes and phonemes respectively) that can (theoretically/mathematically at least) take on values between 0 (no similarity at all) and 1 (identity).[7] Upon application of this formula, we find that *chunnel* is indeed a case with a fairly high value (cf. (6)) whereas *brunch* exhibits much less similarity between its source words and the blend (cf. (7)).

(6) SI_G (*chunnel*) = $(0.857 \cdot 0.857 + 0.833 \cdot 0.714) \div 2$ = 0.665

(7) SI_G (*brunch*) = $(0.222 \cdot 0.333 + 0.8 \cdot 0.667) \div 2$ = 0.304

Unfortunately, this measure is difficult to evaluate unless we know its average values for random word pairs since, in terms of graphemes or phonemes, most words are to some degree similar to other words. We can, however, compare the SI results for our blends to SI results of the simulated blends mentioned above in connection with the degree of recognisability, thereby providing a baseline expectation of random similarity. Figure 5 summarises the results of an ANOVA where average degrees of phonemic similarity (i.e. mean SI_P values) of different kinds of blends to their source words are compared to each other.

The result is clear: the source words of blends are significantly more similar to the blends they are fused into than expected by chance. While the authentic blends do not differ from each other significantly, we still find that

- the average SI_P values for intentional blends are highest (and their dispersion is lowest), reflecting the exploitation of similarity and/or its purposeful creation;
- the similarity of induced errors is characterised by a comparatively large degree of dispersion, reflecting a strong heterogeneity of patterns.

In sum, however, Kemmer's claim, though unsupported by herself and concerned only with intentional blends, as well as Kelly's claim, though inadequately operationalised and also restricted to intentional blends, are clearly borne out. Once a broader but psychologically more realistic definition of similarity is adopted, the similarity between all kinds of blends (other than simulated ones) and their source words is indeed a powerful determinant of blend structure.

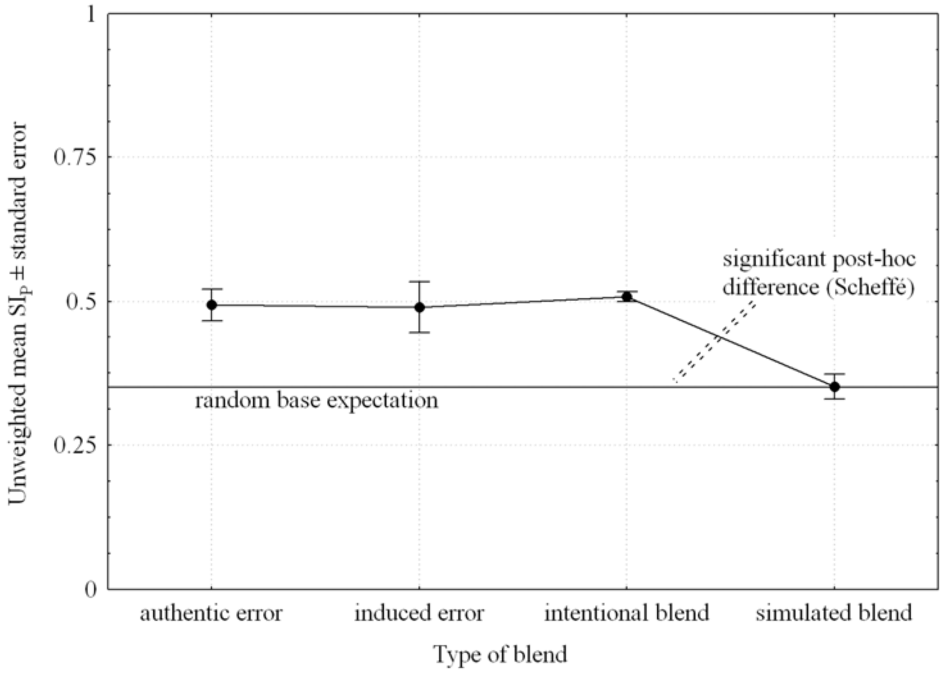

Figure 5: Mean degrees of phonemic similarity between different types of blends and their source words ($F_{3, 1254}$=59.3, p<0.001)

2.3.2 The similarity of source words to each other

Not only has previous research been concerned with the similarity between blends and their source words, but previous studies have also claimed that the source words of authentic error blends are more similar to each other than might be expected by chance (recall MacKay's results for speech-error blends referred to above). Given that the previous section has demonstrated how similarity of source words to blends is relevant across different kinds of blends, let us test whether these claims are similarly borne out for the similarity between source words of different blend types alone.

Similarity is a multifaceted phenomenon, and we have seen that the similarity of two words can be investigated on various levels (graphemic, segmental, syntactic, semantic etc.). Due to lack of space, I will not be able to take all these levels into consideration at the same time and will focus on the phonemic similarity of the source words entering onto blends. A general measure of similarity that has been widely used in both statistical applications in general (e.g. cluster analyses) and in corpus-based approaches to language in particular is the Dice coefficient and one of its derivatives, namely XDice (cf. McEnery and Oakes 1996; Brew and McKelvie 1996). Dice and XDice as used in the present study are based on the number of shared and shared extended bigrams of the phonemes of the two source words of the more than 1,000 intentional and (induced) error blends collected so far.

Before we turn to the results of the blends' source words, however, we again need to determine a random base expectation to compare the blend results with. To that end, I assembled a corpus of 1,000 random word pairs consisting of noun-noun pairs, verb-verb pairs and adjective-adjective pairs in proportions matching the average blend frequencies reported by Kubozono (1990:3). Then, the spellings and phonemic transcription of the two words were extracted from the CELEX database in order to semi-automatically compute Dice and XDice for each of the 1,000 word pairs. These data were analysed with two MANOVAs. The first MANOVA tests whether the average Dice and XDice coefficients for shared phoneme bigrams differed across different blend types. Consider Figure 6.

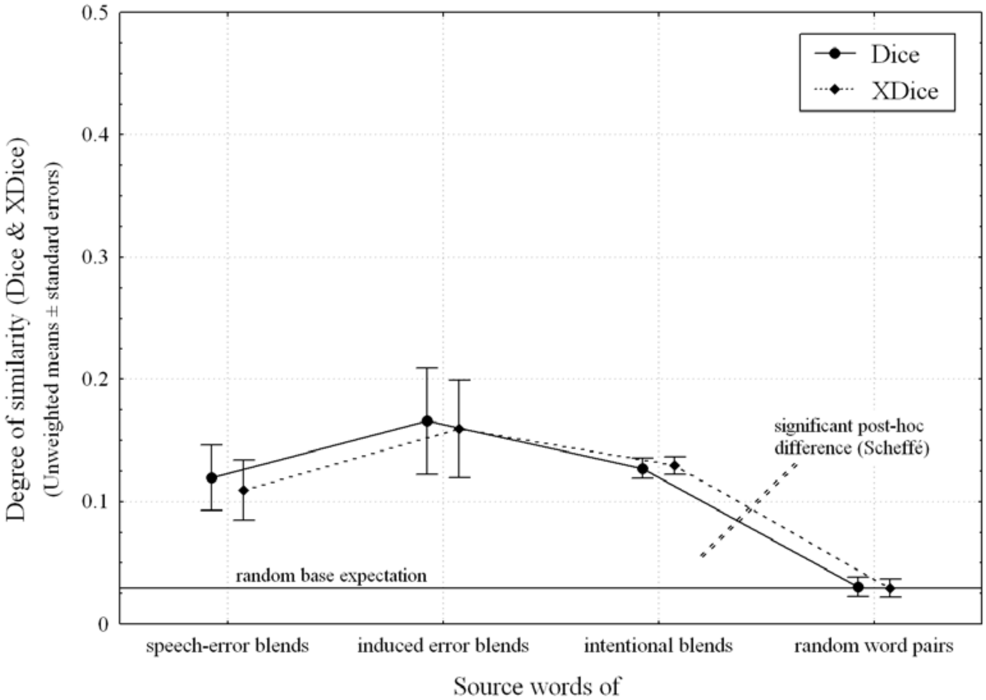

Figure 6: Mean degrees of phonemic similarity between source words of different types of blends ($F_{6, 4214}$=60.48; p<0.001)

Obviously, the degree of similarity between source words is highly dependent on the source of the words. Random word pairs exhibit only very low degrees of similarity, but the source words of blends are on average highly significantly more similar to each other. A look at the similarity of source words alone (i.e. without the blend as in the previous section) leads to the finding that the highest similarity between source words is found with induced error blends. Again, the induced errors exhibit the highest degree of dispersion whereas intentional blends exhibit very little variation. As before, however, the means of the three kinds of blends do not differ from each other significantly.

Given that some researchers have also pointed to the graphemic properties of blends, the second MANOVA was concerned with the graphemic similarity of the source words. However, since error blends only occur in the spoken medium, this analysis excluded the source words of errors and compared only source words of intentional blends to random word pairs. Consider Figure 7.

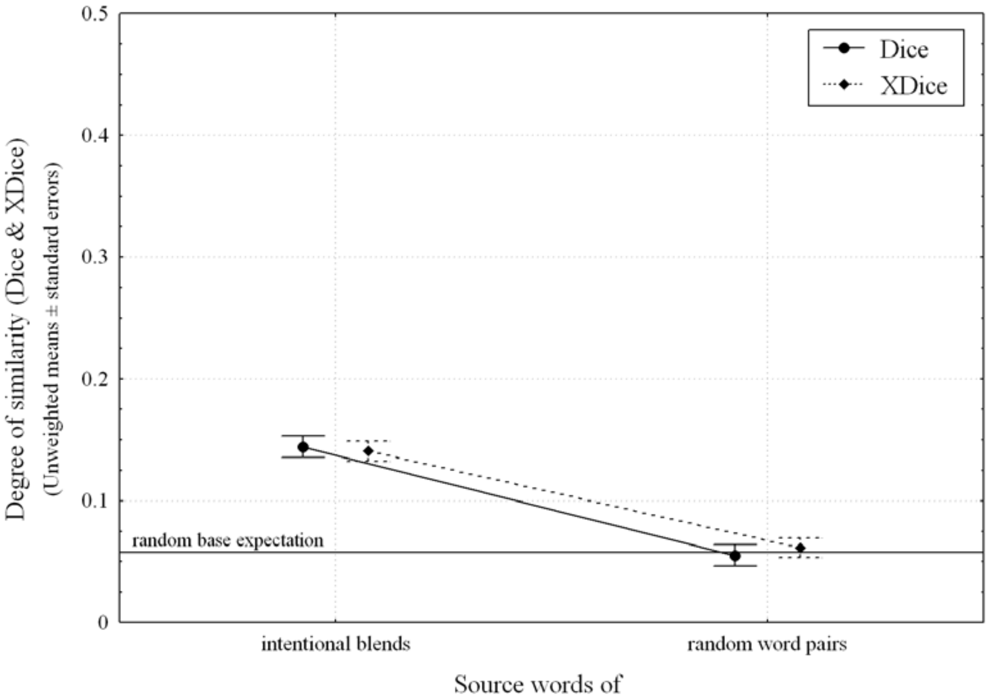

Figure 7: Mean degrees of graphemic similarity between source words of different types of blends ($F_{2, 1985}$=100.03; p<0.001)

Given the previous results, no further comment is necessary: the source words of blends are highly significantly more similar to each other than random words of approximately the same word classes.

3. Summary and conclusion

This paper set out to test some claims about the structure of English morphological blends by improving upon previous analyses. At the same time, I wanted to investigate whether intentional blends and speech-error blends are indeed governed by identical regularities as a few previous studies had argued. The empirical findings reported so far can be summarised as in Table 5.

property of source words	relation between blends
recognisability	speech-error blends ≠ intentional blends
length	speech-error blends ≠ intentional blends
frequency	speech-error blends ≠ intentional blends
similarity to each other	speech-error blends ≈ intentional blends
similarity to the blend	speech-error blends ≈ intentional blends

Table 5: Properties of source words for error blends vs. intentional blends

We have seen that intentional blends are characterised by the desire to maximise the degree of recognisability of their source words. In this respect, they resemble other, more regular word-formation processes (cf. again Cutler 1981), but are crucially distinct from unintentional speech-error blends.

With respect to lengths, intentional blends exhibit markedly distinct lengths of source words while speech-error blends do not. With respect to frequencies, the data are even more heterogeneous since both blend types are characterised by opposite tendencies. Finally, the analysis of similarity has resulted in a correspondence between speech-error blends and intentional blends. However, the data reveal that similarity is not just somewhat important in general – rather, it plays a role on different though related levels: (i) similarity is important for the choice of source words entering into a blend (cf. section 2.3.2) and (ii) it is relevant to *the way* in which the source words are fused.

As to the first aspect, Figure 6 illustrated that both speech-error blends and intentional blends are characterised by a high degree of similarity between their source words. A closer look shows that source words of error blends display an insignificant larger degree of variability along this dimension.

As to the second aspect, the two types of blends are different. On the one hand, both are again characterised by about equally high degrees of similarity between source words and blends and significantly different degrees of variability.[8] But there are also two differences: First, only the similarity of source words to intentional blends derives from the desire to maintain the recognisability of the source words (cf. section 2.1). Second, the degree of similarity seems to be attained by different means, as is shown by a multifactorial analysis of the degree of overlap exhibited by the source words. Consider Figure 8.

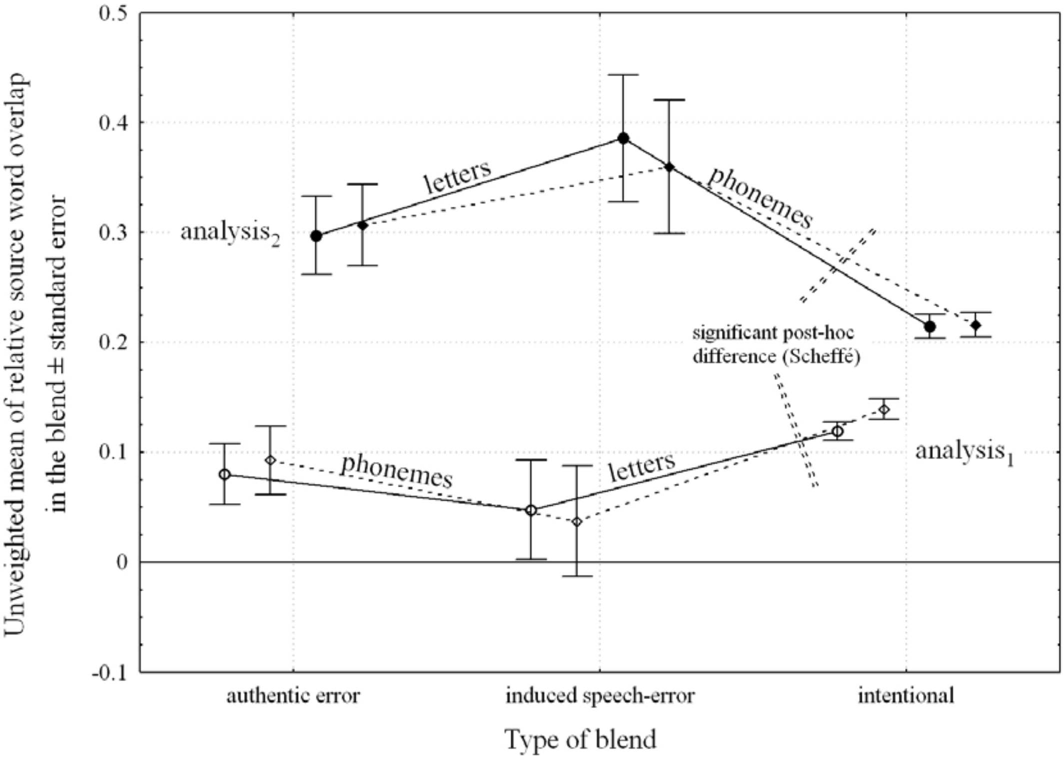

Figure 8: Blend type × analysis type: mean degrees of phonemic and graphemic overlap of source words ($F_{2, 4436}$=62.24; p<0.001)

The result demonstrates that the degree of overlap as measured by $analysis_2$ is significantly higher than that of $analysis_1$ ($F_{1,\ 4436}$=376.33; p<0.001), which is only natural given that $analysis_2$ includes all overlapping segments in the words whereas $analysis_1$ is only concerned with the overlap around the breakpoint area (cf. above). It also demonstrates that again the two kinds of error blends do not differ from each other significantly. But on the other hand, what is less natural at least at first sight is that type of analysis interacts significantly with the type of blend. When only the area around the breakpoint is considered for segmental overlap ($analysis_1$), then the source words of intentional blends exhibit the most overlap – by contrast, when both source words are analysed for overlap completely ($analysis_2$), then intentional blends exhibit the least overlap. This seems to show that the similarity (in terms of its most extreme form, namely overlap) of error blends extends over the whole of the source words whereas that of the intentional blends derives mostly from the area around the breakpoint.

The reason for could be that speech-error blends can only arise at all if the two source words are highly similar to each other across the whole word in the first place. That is, the source words of an error blend must in general be more similar to each other than possible if their similarity was restricted to the breakpoint area alone. For intentional blends, however, the situation is different: these blends are formed consciously and it is probably very difficult to coin an expression by finding source words that (i) denote the required meaning components, (ii) are sufficiently similar to each other (to induce word-play character) and (iii) can overlap not only at the point of fusion but also at many other places. In other words, the degree of similarity that generates speech-error blends automatically is often too difficult to be exploited by speakers trying to form a blend intentionally, which is why for many intentional blends similarity around the breakpoint has to suffice to constitute their playful character.[9]

While the present study has looked at only a limited inventory of relevant variables and while more detailed analysis on the various parameters along which blends of all kinds can differ is necessary, the preceding results already illustrate how the structure of blends (i.e. how two source words are fused into a blend) can be fruitfully investigated. Moreover, even if both kinds of blends are generated by the same psycholinguistic processing system, the ways this system is put to use differ. Further research currently investigates different aspects such as the role of segmental, intonational and semantic aspects of source words. Finally, the equation of speech-error blends and intentional blends is perhaps premature until more (varied) results are available and until the present findings and additional ones are embedded into (psycholinguistic) theories of language production.

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Notes

[1] As has been shown elsewhere (Algeo 1975, 1978; Cannon 1986), it is far from obvious how to define blends in a way that (i) accords with their analyses in the literature and (ii) is restrictive enough to differentiate between blends and results of other irregular word-formation processes such as acronyms and (complex) clippings. The definition just proposed is maximally general and will be adopted for the remainder of the paper even if one might argue it is not restrictive enough.
[2] Consider Cutler (1981) for a related proposal concerning other word-formation processes.
[3] For instance, the words *strong* and *powerful* were blended into *strongowerful* (the longest possible blend) via *strongerful* (a blend of intermediate length) to *sul* (the shortest possible blend).
[4] One such study is Berg (1998), who claims (p. 153) that "[t]he interactants in slips of the tongue tend to be of equal length. When they are of different length, however, the resultant error form takes after the longer rather than the shorter word." This statement is not correct of all error blends. In my corpus of 90 speech-error blends, there are 13 speech-error blends based on monosyllabic and bisyllabic source words. Since these 13 cases comprise 5 monosyllabic and 7 bisyllabic error blends as well as one trisyllabic error blend, the regularity proposed by Berg is clearly not as absolute as he suggests. Thus, (this aspect of) the study of Berg and other works still require further testing.
[5] Alternatively, the vowels might be tested for their similarity, which would still be insufficient for reasons to be outlined in what follows.
[6] I do not take a stand here on the question of whether there is really a schwa between [n] and [l] or whether we have a syllabic instead as it does not affect my main argument.
[7] Note that SI's theoretically possible values of 0 and 1 will hardly be obtained on the basis of actual data. SI=0 would mean that both source words contribute nothing to the blend (i.e. we don't have a blend at all) whereas SI=1 entails that both words overlap completely in the blend. But SI still serves its function well on the basis of its absolute sizes; as an example for a relatively low value, consider the following hypothetical case: two ten-letter source words contribute their first and their last letter respectively to a three-letter blend, i.e. one in which there is also one letter as filler material (e.g. intruding letters as in *donkophant* (*donkey* × *elephant*)). In such a case, SI_G=.033, i.e. practically approaching 0. A similar case can be made for the maximal value of 1, although for such an example we need to look at the phonemic make-up of the blend as well: consider a case where two words are spelt differently and mean two different things, but are pronounced identically; e.g. the hypothetical case of <racket> and <racquit> both pronounced [rækɪt]. In this case, we could have a blend with an SI_P of 1, since both words contribute all of their phonemes to the blend, which would be recognisable on the basis of the spelling only, namely, e.g., <rackit>.
[8] The variances of SI_P values of speech-error blends and intentional blends are significantly different from each other (according to Brown and Forsythe's test for heterogeneity of variances: $F_{1, 1076}$=4.02; p=0.045).
[9] Of course, these findings (and their interpretation) need to be corroborated by analyses of further dimensions constituting similarity such as syllable structure, stress patterns etc.; these analyses are currently undertaken, but results are not yet available.

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