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Size-sound symbolism in the names of cars

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ABSTRACT

This paper discusses the theory of size-sound symbolism which predicts that certain articulatory and/or acoustic characteristics of speech sounds have the potential to symbolise varying degrees of size of different objects. In particular, it examines the extent to which the assumptions of the theory have been applied in the process of creating car names. A set of 260 names of models of cars produced by various manufactures has been analysed phonetically and the results obtained have been juxtaposed with the volume of the respective vehicles. The conclusions reached in the study confirm that size-sound symbolism is utilised in brand names, but only to a limited extent.

1. Introduction

Sound symbolism, also referred to as "phonetic symbolism" (Sapir 1929, Newman 1933, Brown et al. 1955, Marchand 1960) or "phonosymbolism" (Malkiel 1994), is defined as "a general term for an iconic or indexical relationship between sound and meaning, and also between sound and sound" (Åsa 1999: 4). Even though the discussion of this topic can be traced as far back as Plato (cf. the discussion in Åsa 1999, Klink 2000, Yorkston and Menon 2004, Lowrey and Shrum 2007), the issue has been of particular research interest since the 20th century. To provide a few examples of works, some authors have conducted experiments on natural words (cf. Brown et al. 1955, Maltzman et al. 1956, Brackbill and Little 1957, Wichmann et al. 2010, Urban 2011) or nonce words (cf. Sapir 1929, Newman 1933) and analysed their phonetic structure in search of any associations with the words' meanings. There is also growing literature on the notion of "phonestheme" (cf. Bolinger 1950, 1965, Markell and Hamp 1960, Marchand 1960, Jakobson and Waugh 1979, McCune 1985, Nordberg 1986, Rhodes 1994, Åsa 1999) which is understood to be a cluster of phonemes (or, sometimes, a single segment) appearing in words that are semantically, though often not etymologically, related. Furthermore, many authors have tried to establish a possible connection between meaning and individual phonemes. One can find, for instance, numerous studies on poetic language, in which various texts are analysed in terms of the sound-symbolic potential of consonants and vowels (cf. Tolman 1906, Lucas 1955, Householder 1960, Hymes 1960, Murdy 1966, Nash 1980, Chapman 1982, Frazer 1982, Caltvedt 1999, etc.).

As summarised in Stolarski (forthcoming), various typologies of sound-symbolism have been proposed. For instance, Åsa (1999) suggests a division into onomatopoeia, expressive interjections and sound-symbolic phonesthemes, while Marchand (1960) mentions direct imitation and expressive symbolism. One of the most elaborate classifications has been put forward in the preface to a collection of papers edited by Hinton et al. (1994). The notion is divided into corporeal sound symbolism, referring to a special use of sounds and intonation to express inner physical and emotional states, imitative sound symbolism, related to "onomatopoeic words and phrases representing environmental sound" (Hinton et al. 1994: 3), synaesthetic sound symbolism, focusing on "the acoustic symbolisation of non-acoustic phenomena" (Hinton et al. 1994: 4) and conventional sound symbolism dealing mostly with phonesthemes.

Of particular interest to this study is synaesthetic sound symbolism, especially its subtype known as "size-sound symbolism", or "magnitude sound symbolism" (Nuckolls 1999), which aims to look for associations between certain acoustic and/or articulatory characteristics of speech sounds and the semantic field of "size". One of the first authors to tackle this issue was Jespersen (1922) who suggested that in many languages the vowel /i/ is frequently associated with entities which are small, weak or insignificant. The idea was supported by Sapir (1929) who demonstrated that there is a correlation between the degree of openness in the articulation of vowels and the semantic dichotomy "big-small". This theory was further developed by authors such as Newman (1933), Bentley and Varon (1933) and Nichols (1971), and it has become commonly accepted that in the majority of languages open and/or back vowels are perceived as "bigger" than close and/or front vowels.

A possible explanation for such a perception of vocalic articulation may be associated with, as Sapir (1929) calls it, the "kinesthetic" factor. While pronouncing high vowels the tongue is raised towards the palate and the resulting resonance chamber is small. The speaker subconsciously associates this close approximation with the notion of "small size". In the case of open vowels the situation is reversed and this is why they are more "appropriate" to symbolise objects of "large size". An alternative explanation proposed by Sapir involves the claim that "the inherent 'volume' of certain vowels is greater than that of others" (1929: 235). This intuitive idea was developed by Ohala (1983, 1984, 1994) who calls his theory "frequency code". The basic claim he makes is that high acoustic frequency is associated with the meaning "small vocalizer" and low acoustic frequency is connected with the primary meaning "large vocalizer". He states that: "In consonants, voiceless obstruents have higher frequency than voiced because of the higher velocity of the airflow, ejectives higher than plain stops (for the same reason) and dental, alveolar, palatal and front velars higher than labials and back velars. In the case of vowels, high front vowels have higher F_2 and low back vowels the lowest F_2" (1984: 9).

It is worth adding that the basic assumptions concerning the size-sound symbolic potential of vowels were confirmed in a cross-linguistic study by Ultan (1978). As mentioned in Stolarski (forthcoming), Ultan analysed as many as 136 languages and the results of his research confirm that diminutive size is frequently associated with high and/or front vowels.

In recent years the theory of sound symbolism has been applied in several studies on brand name development. Of particular interest to the present paper is the study by Klink (2000) who investigated, among other things, the perception of front versus back vowels in potential new brand names. The results he obtained fully confirmed the assumed association of such articulations with diminutive size. Moreover, Lowrey and Shrum (2007) conducted a psycholinguistic experiment in which they showed that in potential brand names for two-seater convertibles words with front vowels were preferred over words with back vowels. Conversely, in potential names for sport utility vehicles words with back vowels were found more fitting than words with front vowels. These results closely correspond to the assumptions of size-sound symbolism because two-seater convertibles are substantially smaller than SUVs. Additionally, Lowrey and Shrum (2007) frequently refer to the idea advanced by Yorkston and Menon that "consumers use information they gather from phonemes in brand names to infer product attributes and to evaluate brands" (2004: 43). Yorkston and Menon also suggest that the process in which sound symbolism manifests in consumer judgements is "uncontrollable, outside of awareness, and effortless, making it automatic" (2004: 43).

The major aim of this study is to examine the degree to which size-sound symbolism is applied in the creation (and possibly the consumer interpretation) of real brand names. In particular, the distribution of vowels will be investigated. The sample chosen in the experiment described below involves names of cars because they can easily be juxtaposed with the size of the vehicles they refer to. Additionally, even though many cars are not produced in an English speaking country, their names are usually either natural English words or are designed in such a way as to be pronounceable in English for reasons of broad marketability. It must be stressed, though, that the study does not aim at evaluating the assumptions of the theory itself. It is not designed to estimate the possible size-sound symbolic potential of English phonemes and to verify the claims discussed above. The aims are limited only to assessing whether or not the theory is applied in the process of car name-giving.

2. Data and methods

In order to investigate the problem outlined in the introduction, data on the sizes of 260 cars have been collected. In this process the following limits were adhered to:

1. The vehicles taken into consideration were models produced between 2006 and 2011. In this way the issue of technological process was avoided. Technical specifications of cars, including their size, have undergone constant change since the beginnings of the automotive industry. It is likely that the idea of a big car may be different now than it was, for example, 30 years ago. However, such a factor should not have any considerable influence within the period of 5 years chosen for the present study.

2. Only those cars whose names could be pronounced as "normal" English words were included. Abbreviations and acronyms were automatically excluded. Even if their articulation involves vowel sounds, they focus buyers' attention mainly on the consonants. Consequently, they are not suitable for examining the size-sound symbolic potential of vowels.

3. In most cases which involved two-word names only the first was analysed phonetically. The second word was frequently used to distinguish between several models produced by a given manufacturer

and expressed additional qualities common to different cars. For example, in the case of Toyota “Fortuner 3.0D-4D Automatic 2010” only the word “fortuner” was examined, since the element “automatic” is commonly used with other models, for instance in “Corolla 1.8 Automatic 2011”, “FJ Cruiser 4×4 Automatic 2011”, “Matrix S Automatic 2011”, “Yaris 1.5 Automatic 2011”, and so forth.

4. A given model is almost always available in more than one version. This immediately caused problems with establishing the volume of vehicles, because it was frequently the case that the size of one version differed sharply from the size of another. In order to tackle this issue the following solution was applied: in the case of each model the smallest possible version was chosen. This allowed a relatively objective comparison of different models. If the smallest version of one car was bigger than the smallest version of another car, then the former model could be regarded as generally bigger than the latter.

5. In each case, the size of the vehicles was established as a product of three values: the length, the width and the height. Obviously, such a solution fails to recognise differences in car shapes and the value ascribed to each vehicle is only an approximation of its overall volume.

The data gathered for the current experiment are presented in the appendix. They are based on the information found on various Web sites. The two which were most frequently accessed were “carsplusplus.com” and “autos.yahoo.com”, but occasionally other web pages were also searched. It must be stressed that the vehicles listed in the appendix are not all the possible models for the period 2006 to 2011. Indeed, the total number of cars produced during this time is possibly substantially higher. Nevertheless, considerable effort has been invested in collecting data on models produced by diverse car manufacturers. In the appendix one can notice cars from such countries as the USA, Japan, England, France, South Korea, Italy, Germany, Spain and Romania.

As far as the RP pronunciation of the names is concerned, it was, first and foremost, established on the basis of Wells (2008). In cases when a given name was not found in Wells, it was deduced from the pronunciation of similar words commonly used in English. For instance, the articulation of “Fluence” was established on the basis of its similarity to the word “fluent”, and the possible pronunciation of “Espace” was formed by comparing it to “escape” and "space". In some more complicated cases, the solutions were found on various internet forums where the problem of the "correct" articulation of a given name was discussed. It must be stressed, however, that some names involve a degree of variability in the way they are pronounced. There may be consistent differences in the manner they are articulated in different dialects of English. Such discrepancies result from systemic, realisational, lexical or distributional differences (cf. Gimson 1994: 81-82). For example, Chevrolet Aveo is relatively consistently articulated as /ə'veɪoʊ/ in General American, but as /'æviəʊ/ in RP. In the present study this problem has been solved by choosing only one dialect for the analysis. Nevertheless, even in RP itself, some of the car names in the appendix may involve alternative articulations. Therefore, the suggested transcription should be treated as an attempt to provide the most typical pronunciations of the names, although in some cases other phonetic realisations are also possible.

As noted in the introduction, there are reasons to assume that back and/or open vowels are more suitable to represent small objects, while front and/or close vowels are expected to be associated with the notion of "large size". So far no convincing evidence has been found as to which of the two articulatory scales – the vertical or the horizontal – is more crucial in size-sound symbolism. Therefore, in the experiments described below both scales have been treated as equally important. With this in mind, the RP vowels have been divided into the ones which theoretically have the potential to symbolise "small size" and those which are more suitable in names referring to "large size". The result of this initial analysis, based on the RP vowel qualities suggested in Gimson (1994), Wells (2008) and Roach (2009), are depicted in Figures 1 and 2.

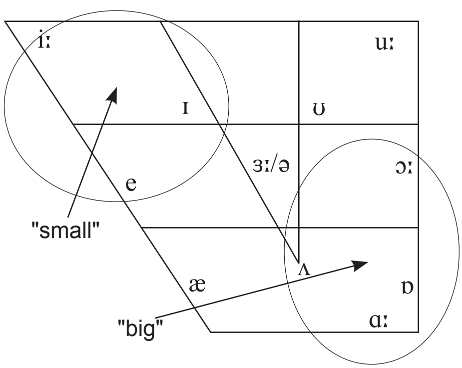

Figure 1. RP monophthongs and their predicted relation to the notions of "small" and "big"

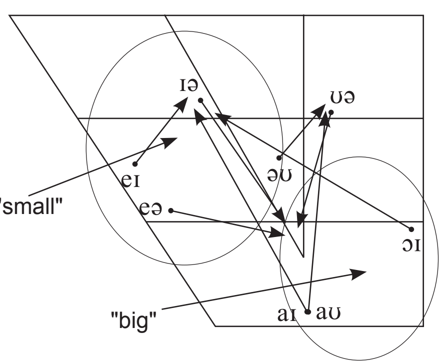

Figure 2. RP diphthongs and their predicted relation to the notions of "small" and "big"

Out of the 12 RP monophthongs the ones which are presumed to be “small” are /iː/ and /ɪ/ (cf. Figure 1). They are both high and front, which suggests their strong size-sound symbolic potential. The case of the vowel /e/ is less obvious. Although it is clearly front, it is also pronounced in the middle of the vertical articulatory scale. The potential of the vowel to symbolise “small size” is, consequently, less certain than with /iː/ and /ɪ/.

In many types of phonemic transcription, including the one used here, one may also encounter [i], which is intended to represent the final vowel in words such as *pretty*, but without having its own separate phonemic status. Gimson refers to such an articulation as “a short variety of /iː/” (1994: 99) and explains that no ambiguity arises from such pronunciations since the contrast between /ɪ/ and /iː/ is neutralised in word-final position. It should be stressed that in both experiments described below all of the three high front types of articulation are counted as one because of the problem with the classification of [i]. Moreover, in terms of size-sound symbolism, the three varieties represent one class of sounds with a very high potential to symbolise “small size”. For the same reason, no distinction is made between /ɪə/ and [iə].

The vowels which are presumed to symbolise “large size” are /ɑː/ and /ɒ/. Both are clearly open and back. The interpretation of /ʌ/ and /ɔː/, however, is more problematic. The former is an open centralised vowel, but it could be subsumed into the area of the lower-right hand corner of the vowel quadrilateral. The classification of /ɔː/ is even less obvious. Although the vowel is clearly back, its pronunciation on the vertical articulatory scale is central. As a consequence, its potential to symbolise “large size” is presumed to be noticeably lower than those predicted for /ɑː/ and /ɒ/.

The articulation of the central vowels /ɜː/ and /ə/ is not expected to be related to any size distinctions. Except for the slightly more open realisation of /ʊ/ in the final position, they are pronounced in exactly the middle of both the vertical and horizontal articulatory scales. The size-sound symbolic potential of the other three remaining monophthongs – /æ/, /ʊ/ and /uː/ - is difficult to predict. The former is clearly an open vowel, but at the same time it is pronounced more to the front of the mouth than other open monophthongs. The latter two are articulated in the close-back region, which makes them “small” according to the horizontal scale, and “big” according to the vertical scale.

The RP diphthongs depicted in Figure 2 are also more difficult to interpret in terms of their size-sound symbolic potential. There are cases in which one part of the gliding vowel is supposedly “small” and the other one is “big”, or vice versa. For this reason the diphthongs /aɪ/ and /ɔɪ/ are presumed not to play a role in phonetic symbolism. Similarly, it is difficult to predict the exact potential of /eə/, /əʊ/ and /ʊə/. It could be speculated that /aʊ/ is rather "big", and /ɪʊ/ rather small, but the validity of this assumption is debatable. The only case which does not cause uncertainty is /eɪ/. According to the theories presented in the introduction, this diphthong should have the potential to symbolise objects that are small in size.

The analysis presented below is divided into two parts. In the first one the frequencies of the vowels found in the data are compared to the general frequencies of RP vowels suggested in Fry (1947). Such a comparison should reveal any universal strategies employed in the process of naming cars. The second part addresses the major aim of the paper and deals with the distribution of vowels in different groups of cars divided according to size.

3. Results and discussion

Table 1 presents a summary of the frequency of all the vowels found in the car names listed in the appendix. The percentage results have been calculated for the total 1478 instances of phonemes encountered in the analysed data. These results are compared with the frequency of RP vowels in transcribed spoken text proposed in Fry (1947).

Table 1. Comparison of the frequency of vowels found in the data and the results on general RP vowel frequencies reported in Fry (1947)

Expectations about vowel potential in sound symbolism	RP vowels	Frequencies of vowels in the current experiment	Text frequencies of vowels on the basis of Fry (1947)
"small"	/ɪ/, [i], /iː/	7.92%	9.98%
	/eɪ/	1.29%	1.71%
	/e/	2.50%	2.97%
unspecified	/ɪə/, [iə]	0.61%	0.21%
	/eə/	0.14%	0.34%
	/əʊ/	3.59%	1.51%
	/aɪ/	1.15%	1.83%
	/ɜː/	0.54%	0.52%
	/ə/	10.08%	10.74%
	/ʊ/	0.47%	0.86%
	/uː/	1.29%	1.13%
	/ʊə/	0.07%	0.06%
	/ɔɪ/	0.20%	0.14%
	/æ/	4.19%	1.45%
	/aʊ/	0.20%	0.61%
"big"	/ɔː/	1.08%	1.24%
	/ʌ/	0.74%	1.75%
	/ɒ/	1.76%	1.37%
	/ɑː/	2.44%	0.79%

It is readily visible that "small" vowels are generally less frequent in car names than in the summary reported in Fry (1947). The close front /ɪ/, [i] and /iː/ were observed in 7.92% of the cases in the current experiment, while Fry suggests that the frequency of their occurrence amounts to 9.98%. This difference is statistically significant ($p = 0.0082$). In the case of the other two "small" vowels the situation is analogous. Both /eɪ/ and /e/ were encountered less frequently than in Fry's analysis, but these differences cannot be statistically proven (in both cases $p > 0.05$).

The results for "big" vowels are less consistent. On the one hand, the "biggest" RP monophthongs /ɑː/ and /ɒ/ were found to be more frequent in the current experiment than in Fry's publication. In the case of /ɑː/ the difference must be regarded as highly statistically significant ($p < 0.0001$). The results for /ɒ/, however, are not statistically meaningful ($p = 0.1917$). Moreover, the frequency of occurrence for /ɔː/ suggests that the vowel could actually be less frequent in car names than in Fry's analysis, but the difference is, again, statistically insignificant ($p = 0.5782$). Finally, /ʌ/ turned out to be less frequent in the current analysis than in Fry (1947) and the difference is statistically meaningful ($p = 0.0031$).

The data point to the conclusion that there is a general tendency of car manufacturers to create names with a relatively lower number of high front (or "small") vowels for their cars. Also, the producers tend to use a higher number of open back (or "big") vowels in naming their products, but this observation is less definite because of the contrary results for /ɔː/. These tendencies may result from the fact that small cars are more desirable only in certain circumstances. For example, compact vehicles are practical for driving around the city and may be associated with lower petrol consumption. In general, however, large cars are more attractive to customers (at least those in the same price range as smaller models) as they tend to be perceived as more comfortable and providing ample luggage space. This is probably why companies prefer naming cars with the use of "bigger" rather than "smaller" vowels. Another plausible explanation for the tendency is connected with the fact that in the literature on sound-symbolism one may find dichotomies which are extensions of the basic contrast "big-small". For example, Jespersen (1922), Miron (1961) and Levickij (1971, 1973) suggest the opposition "strong-weak", Jespersen (1922) mentions "significant-insignificant" and Ohala (1994) discusses "dominant-subordinate". The extensions of the meanings "big" – "strong", "significant" and "dominant" – are features which are desirable in cars. Drivers want their vehicles to exhibit such characteristics. Conversely, the opposite associations – "weak", "insignificant" and "subordinate" –

should be avoided. Car manufactures want to communicate the positive qualities of their products to customers and this can also be done by the use of names with a relatively low number of high front vowels and a higher number of open back vowels.

As far as the frequency of occurrence of vowels which are unspecified for their role in sound symbolism is concerned, /əʊ/ and /æ/ are visibly more common in the current experiment than in Fry's summary, but such a distribution of the phonemes cannot be explained by any observations related to size-sound symbolism. In all other cases of the "unspecified" vowels the results obtained in the present study are similar to the ones reported in Fry (1947).

In order to examine the major problem raised in this paper – the possible influence of vehicle size on the distribution of vowels in corresponding car names – the 260 vehicles listed in the appendix have been divided into four groups of 85 cars. The first represents the smallest vehicles whose volume does not exceed 11054.7 dm^3. The second includes cars which are average. Their size ranges from 11163.7 dm^3 to 12784 dm^3. The third involves vehicles which are bigger than in the previous two groups. Their volume ranges from 12800.2 dm^3 to 15706.3 dm^3. Finally, the fourth group is comprised of the largest cars whose size is greater than 15706.3 dm^3. The frequency of occurrence of all the RP vowels has been calculated separately in each group and the results are presented in Table 2 below.

The only consistent correlation which can be observed concerns the high front /ɪ/, [i] and / iː/. The frequency of the vowels gradually decreases as the cars become bigger. It is the highest in the first group (10.37%), lower in the second (9.5%), still lower in the third (6.79%) and the lowest in the fourth (5.62%). More importantly, the results are statistically relevant. The p-value for the difference between the second and fourth groups equals 0.0413, and that for the difference between the first and fourth groups equals 0.0166. Consequently, it is a fact that car manufacturers tend to signal the size of the vehicles they produce by the frequency of high front vowels in car names.

The distribution of the other "small" vowels in Table 2 does not confirm the predicted tendencies. The frequency of their occurrence does not decrease with increasing size of the analysed vehicles. In the case of /eɪ/ the situation even seems to be reversed, since in the first group the diphthong appeared in 0.61% of the cases, and, for instance, in the third group in 2.09% of the cases. Still, this difference is not statistically relevant ($p = 0.0951$) and because the frequency in the fourth group decreases to 1.47%, no direct correlation can be confirmed.

Table 2. Comparison of the distribution of vowels in different groups of cars divided according to size

Expectations about vowel potential in sound symbolism	RP vowels	Group I	Group II	Group III	Group IV
"small"	/ɪ/, [i], /iː/	10.37%	9.50%	6.79%	5.62%
	/eɪ/	0.61%	0.84%	2.09%	1.47%
	/e/	2.13%	2.79%	2.35%	2.69%
unspecified	/ɪə/, [iə]	0.91%	0.28%	0.26%	0.98%
	/eə/	0.30%	0.28%	0.00%	0.00%
	/əʊ/	6.10%	3.35%	3.92%	1.47%
	/aɪ/	1.83%	0.56%	0.78%	1.47%
	/ɜː/	0.30%	0.28%	1.04%	0.49%
	/ə/	7.62%	10.89%	9.66%	11.74%
	/ʊ/	0.30%	0.28%	0.52%	0.73%
	/uː/	0.30%	2.79%	0.78%	1.22%
	/ʊə/	0.00%	0.00%	0.26%	0.00%
	/ɔɪ/	0.00%	0.00%	0.00%	0.73%
	/æ/	4.57%	3.07%	4.70%	4.40%
	/aʊ/	0.00%	0.00%	0.26%	0.49%
"big"	/ɔː/	1.22%	1.12%	0.78%	1.22%
	/ʌ/	0.00%	0.56%	0.52%	1.71%
	/ɒ/	1.52%	1.12%	3.13%	1.22%
	/ɑː/	2.13%	2.51%	1.83%	3.18%

Among the "big" vowels, only /ɑː/ and /ʌ/ behave in the expected way. Their frequency decreases with the increasing size of cars. Nevertheless, these tendencies are very weak and cannot be statistically proven. Also, the shifts in the distribution of /ɑː/ are not consistent because in the third group the vowel was, relatively speaking, the least frequent. Other vowels presumed to symbolise "large size" do not fall into patterns which could lead to any valid conclusions.

Among the vowels whose size-sound symbolic potential has not been specified, /əʊ/ behaves in a way which suggests correlation with the size of analysed cars. The larger the vehicles, the less frequent the occurrence of the vowel. Although this tendency is not fully consistent (the diphthong is slightly more common in the third group than in the second), it should be treated as statistically significant. The p-value for the difference between the frequency in the first group and the frequency in the fourth group equals 0.0007. Still, such a distribution of the vowel cannot really be explained in the sound symbolic framework adopted in this paper. From the purely phonetic point of view, /əʊ/ begins with a quality similar to /ə/ and ends with an articulation similar to /ʊ/. None of these pronunciations can be clearly specified in terms of their potential to symbolise size. Moreover, the results in Table 2 do not support the possible claim that either /ə/ or /ʊ/ is suitable to represent small objects. In fact, in both cases the reverse could be speculated, since the frequency of the vowels tends to increase as the size of cars becomes larger.

All other cases of "unspecified" vowels do not reveal statistically significant results and no additional illations on the possible symbolic potential of these phonemes were drawn.

4. Conclusions

The analysis performed in this study indicates that size-sound symbolism is to a limited extent applied in car names. The frequency of high front vowels is the highest among names for small cars and it decreases with the increase in volume for the vehicles analysed. The reverse tendency among open back vowels, however, was not clearly confirmed. An additional observation made in the course of the analysis reveals that car manufacturers tend to make use of high front vowels in naming their products less frequently than can be observed in everyday speech. Conversely, open back vowels are utilised to a greater degree than was predicted in the summary prepared by Fry (1947). This implies that, in general, car names are designed in such a way as to be associated not only with the notion "big", but also with additional attributes such as "strong", "significant", "dominant", "heavy", etc. A possible future research could investigate these secondary associations. Some of them are directly measurable for cars and could be statistically evaluated in relation to sound symbolism.

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APPENDIX

Model	Predicted RP Pronunciation	Length (mm)	Width (mm)	Height (mm)	Overall size (dm³)
GMC					
Acadia 2011	/əˈkeɪdiə/	5110	2010	1860	19104,2
Canyon Crew Cab 4x4 SLE-1 2011	/ˈkænjən/	5270	1750	1650	15217,1
Savana Cargo Van G1500 2011	/səˈvænə/	5700	2020	2130	24524,8
Sierra 1500 2011	/siˈerə/	5230	2040	1880	20058,1
Terrain 2011	/təˈreɪn/	4710	1860	1690	14805,4
Yukon 2011	/ˈjuːkɒn/	5140	2010	1960	20249,5
Envoy 2009	/ˈenvɔɪ/	4870	1900	1830	16933,0
Honda					
Accord 2.0 Sport 2011	/əˈkɔːd/	4670	1770	1450	11985,6
Civic 1.3 i-DSi VTEC Hybrid 2010	/ˈsɪvɪk/	4550	1760	1440	11531,5
Element 2011	/ˈelɪmənt/	4320	1790	1830	14151,0
Fit 2011	/fɪt/	4110	1700	1530	10690,1
Insight 1.3 2009	/ˈɪnsaɪt/	4400	1700	1430	10696,4
Jazz 1.2 i-VTEC 2011	/dʒæz/	3910	1700	1530	10169,9
Legend 3.5i V6 2011	/ˈledʒənd/	4990	1820	1440	13077,8
Odyssey EX 2011	/ˈɒdəsi/	5160	2020	1740	18136,4
Ridgeline 2011	/ˈrɪdʒlaɪn/	5260	1980	1790	18642,5
Pilot 2010	/ˈpaɪlət/	4860	2780	1810	24454,5
Stream 1.7i ES 2009	/striːm/	4580	1700	1600	12457,6
Hyunday					
Accent 2011	/ˈæksənt/	4290	1700	1480	10793,6
Equus Ultimate 2011	/ˈekwəs/	5170	1900	1500	14734,5
Genesis Coupe 2.0T 2010	/ˈdʒenəsɪs/	4640	1870	1390	12060,8
Getz 1.1 GL 2011	/gets/	3820	1670	1500	9569,1
Santa Fe 2.2 CRDi 2011	/sæntə ˈfeɪ/	4670	1900	1770	15705,2
Sonata 2.0 GLS 2011	/səˈnɑːtə/	4750	1830	1430	12430,3
Terracan 2.9 CRDi GL 2011	/ˈterəkæn/	4720	1870	1800	15887,5
Tucson 2.0 4WD GLS 2011	/ˈtuːsɒn/	4330	1800	1740	13561,6
Veracruz 2011	/vɪərəˈkruːz/	4850	1950	1810	17118,1
Grandeur 2.2 CRDi 2009	/ˈgrændʒə/	4900	1870	1500	13744,5
Matrix 1.6 2010	/ˈmeɪtrɪks/	4060	1750	1640	11652,2
Ceed 1.4 CVVT 2011	/siːd/	4270	1800	1490	11452,1
Forte EX 2011	/ˈfɔːteɪ/	4490	1770	1410	11205,7
Optima EX Turbo 2011	/ˈɒptɪmə/	4850	1840	1460	13029,0
Picanto 1.1 2011	/pɪˈkæntəʊ/	3540	1600	1490	8439,4
Rio 1.4 2010	/ˈriːəʊ/	4000	1700	1480	10064,0
Sorento 2.2 CRDi 2011	/səˈrentəʊ/	4690	1890	1760	15600,8
Soul 1.6 2011	/səʊl/	4110	1790	1620	11918,2
Sportage 2.0 2010	/ˈspɔːtɑːʒ/	4360	1810	1700	13415,7
Venga 1.4 CVVT 2011	/ˈvengə/	4070	1770	1610	11598,3
Cerato 1.6 LX 2009	/səˈrɑːtəʊ/	4350	1740	1480	11202,1
Magentis 2.0 SE 2008	/məˈdʒentɪs/	4740	1830	1420	12317,4
Rondo 2.4 2007	/ˈrɒndəʊ/	4550	1830	1660	13822,0
Spectra 2.0 2008	/ˈspektrə/	4510	1740	1480	11614,2
Carnival 2.7 V6 EX 2007	/ˈkɑːnɪvl/	4820	1990	1820	17457,1
Mitsubishi					
Colt 1.1 2011	/kəʊlt/	3890	1700	1530	10117,9
Eclipse 2010	/ɪˈklɪps/	4590	1840	1370	11570,5
Endeavor 2011	/ɪnˈdevə/	4850	1880	1770	16138,9
Lancer 1.5 2011	/ˈlɑːnsə/	4580	1770	1500	12159,9
Outlander 2.0 2011	/ˈaʊtlændə/	4670	1810	1690	14285,1
Grandis 2.0 Di-D 2008	/ˈgrændɪs/	4770	1800	1660	14252,8
Space Star 1.3 Family 2008	/ˈspeɪs stɑː/	4060	1720	1520	10614,5
Nissan					
Altima 2.5 2011	/ˈɔːltɪmə/	4850	1800	1480	12920,4
Armada Platinum 2011	/ɑːˈmɑːdə/	5280	2020	1970	21011,2
Cube 1.5 dCi 2010	/kjuːb/	3990	1700	1680	11395,4
Frontier King Cab S 2011	/ˈfrʌntɪə/	5230	1860	1750	17023,7
Juke 1.5 dCi 2011	/dʒuːk/	4140	1760	1580	11512,5
Maxima QX 3.0 2011	/ˈmæksɪmə/	4930	1790	1440	12707,6
Micra 1.2 2011	/ˈmaɪkrə/	3790	1670	1530	9683,8
Note 1.4 2010	/nəʊt/	4110	1700	1560	10899,7
Pathfinder 2.5 dCi 2011	/ˈpɑːθ faɪndə/	4750	1860	1790	15814,7
Pixo 1.0 2011	/ˈpɪksəʊ/	3570	1610	1480	8506,6
Quest 3.5 2008	/ˈkwest/	5190	1980	1830	18805,4
Rogue 2011	/ˈrəʊg/	4660	1810	1670	14085,8
Sentra 2.0 2011	/ˈsentrə/	4570	1800	1520	12503,5
Titan 2011	/ˈtaɪtn/	5710	2030	1900	22023,5
Versa 1.6 2011	/ˈvɜːsə/	4480	1700	1540	11728,6
Patrol 3.0 TD GL 2009	/pəˈtrəʊl/	5040	1950	1860	18280,1
Hardbody 2400i 4x4 2007	/ˈhɑːdbɒdi/	4910	1830	1680	15095,3
Qashqai 1.5 dCi 2011	/ˈkæʃkaɪ/	4550	1790	1650	13438,4
Murano 3.5 V6 2011	/məˈrɑːnəʊ//	4870	1890	1730	15923,4
Navara 2.5 dCi 2010	/nəˈvɑːrə/	5140	1860	1760	16826,3

Model	Predicted RP Pronunciation	Length (mm)	Width (mm)	Height (mm)	Overall size (dm³)
Renault					
Clio 1.2 2011	/ˈkliːəʊ/	4040	1730	1500	10483,8
Espace 1.9 dCi Avantage 2008	/ɪˈspeɪs/	4670	1900	1700	15084,1
Fluence 1.5 dCi 110 FAP Eco 2011	/ˈfluːəns/	4620	1820	1480	12444,4
Kangoo 1.2 Campus 2011	/kæŋˈguː/	4040	1680	1830	12420,6
Laguna 1.5 dCi 110 FAP 2011	/ləˈguːnə/	4700	1820	1450	12403,3
Latitude 2.5 2011	/ˈlætɪtjuːd/	4890	1840	1490	13406,4
Megane 1.4 Authentique 2011	/məˈgæn/	4220	1780	1460	10966,9
Modus 1.2 2011	/ˈməʊdəs/	3880	1720	1600	10677,8
Scenic 1.4 Authentique 2008	/ˈsiːnɪk/	4270	1820	1630	12667,4
Twingo 1.2 Authentique 2008	/ˈtwɪŋgəʊ/	3440	1640	1430	8067,5
Trafic 1.9 DCi Van 2007	/ˈtræfɪk/	4790	2240	1970	21137,3
Seat					
Alhambra 1.4 TSi 2011	/ælˈhæmbrə/	4860	1910	1730	5716,4
Ibiza 1.2 2011	/ɪˈbiːθə/	4060	1700	1450	10007,9
Leon 1.4 2011	/ˈliːən/	4320	1770	1460	11163,7
Cordoba 1.2 Reference 2008	/ˈkɔːdəbə/	4290	1700	1450	10574,9
Toledo 1.6 Reference 2008	/təˈliːdəʊ/	4450	1750	1440	11214,0
Suzuki					
Alto 1.1 Classic 2011	/ˈæltəʊ/	3500	1480	1460	7562,8
Equator 2011	/ɪˈkweɪtə/	5250	1860	1750	17088,8
Grand Vitara 1.6 2011	/ˈgrænd vɪˈtɑːrə/	3870	1820	1690	11903,3
Jimny 1.3 2011	/ˈdʒɪmni/	3670	1610	1680	9926,6
Kizashi Sport 2011	/kəˈzɑːʃi/	4660	1830	1490	12706,4
Splash 1.0 2011	/splæʃ/	3720	1690	1600	10058,9
Swift 1.2 DDiS 2011	/swɪft/	3860	1700	1520	9974,2
Ignis 1.3 DDiS Club 2008	/ˈɪgnɪs/	3780	1610	1570	9554,7
Forenza 2007	/fəˈrenzə/	4510	1730	1450	11313,3
Liana 1.3 Club 2008	/liːˈɑːnə/	4360	1700	1550	11488,6
Reno Convenience 2008	/ˈriːnəʊ/	4300	1730	1450	10786,6
Aerio AWD 2007	/ˈeəriəʊ/	4360	1730	1550	11691,3
Verona 2006	/vəˈrəʊnə/	4780	1820	1460	12701,4
Toyota					
4Runner Limited V6 2011	/ˈfɔːrʌnə/	4830	1930	1820	16965,9
Auris 1.33 2010	/ˈɔːrɪs/	4250	1770	1520	11434,2
Avalon 3.5 2010	/ˈævəlɒn/	5030	1860	1490	13940,1
Aygo 1.0 2011	/ˈeɪgəʊ/	3420	1620	1470	8144,4
Camry Hybrid 2010	/ˈkæmri/	4810	1830	1470	12939,4
Corolla 1.3 Advanced 2010	/kəˈrɒlə/	4550	1770	1480	11919,2
FJ Cruiser 2010	/ˈkruːzə/	4680	1910	1820	16268,6
Highlander 2.7 2010	/ˈhaɪləndə/	4790	1920	1740	16002,4
Hilux 2.5 D-4D SingleCab 2010	/ˈhaɪlʌks/	5260	1770	1690	15734,2
Land Cruiser 3.0 D-4D 4WD 2011	/ˈlænd kruːzə/	4770	1890	1900	17129,1
Prius 2011	/ˈpraɪəs/	4470	1750	1500	11733,8
Sequoia 2011	/sɪˈkwɔɪə/	5220	2040	1900	20232,7
Sienna 2011	/siˈenə/	5090	1990	1760	17827,2
Tacoma 2010	/təˈkəʊmə/	4840	1840	1680	14961,4
Tundra Regular Cab 4.0L V6 2011	/ˈtʌndrə/	5340	2040	1930	21024,6
Urban Cruiser 1.33 2011	/ˈɜːbən/	3940	1730	1530	10428,8
Venza 2010	/ˈvenzə/	4810	1910	1620	14883,1
Verso 1.6 2011	/ˈvɜːsəʊ/	4450	1800	1630	13056,3
Yaris 1.0 2011	/ˈjɑːrɪs/	3790	1700	1540	9922,2
Fortuner 3.0D-4D Automatic 2010	/ˈfɔːtʃənə/	4700	1850	1860	16172,7
Sprinter 140i 2008	/ˈsprɪntə/	4180	1700	1480	10516,9
Quantum 2.5 D4-D Bus 2007	/ˈkwɒntəm/	5390	1890	2290	23328,5
Volkswagen					
Beetle 1.4 2011	/biːtl/	4140	1730	1500	10743,3
Caddy 1.2 TSI 2011	/ˈkædi/	4410	1800	1860	14764,7
Eos 1.4 TSi 2011	/ˈiːɒs/	4410	1800	1450	11510,1
Fox 1.2 2011	/fɒks/	3830	1670	1550	4012,2
Golf 1.2 TSi 2011	/gɒlf/	4210	1790	1490	11228,5
Jetta 1.2 TSI 2011	/ˈdʒetə/	4650	1780	1460	12084,4
Multivan 1.9 TDi Startline 2011	/ˈmʌltivæn/	4900	1910	1950	18250,1
Passat 1.4 TSi 2011	/pæˈsæt/	4780	2070	1480	14644,0
Phaeton 3.0 V6 TDi 4Motion 2011	/ˈfeɪtn/	5060	1910	1460	14110,3
Polo 1.2 Fun 2011	/ˈpəʊləʊ/	3910	1680	1530	10050,3
Scirocco 1.4 TSI 2011	/sɪˈrɒkəʊ/	4260	1820	1410	10932,0
Sharan 1.8 T 2010	/ˈʃærən/	4640	1820	1740	14694,0
Touareg V6 2011	/tʊˈɑːreg/	4800	1950	1710	16005,6
Citi Sport 1.4i 2009	/ˈsɪti spɔːt/	3820	1400	1620	8663,8
Kombi 1.9 TDi 2009	/ˈkɒmbi/	4900	1970	1910	18437,2
Rabbit 2007	/ˈræbɪt/	4220	1770	1480	11054,7
Bora 1.4 2008	/ˈbɔːrə/	4380	1740	1450	11050,7
Amarok 2.0 TDi 4x4 2011	/ˈæmərɒk/	5260	1950	1840	18872,9
Routan 2011	/ruːˈtɑːn/	5150	1960	1760	17765,4

Model	Predicted RP Pronunciation	Length (mm)	Width (mm)	Height (mm)	Overall size (dm^3)
Alfa Romeo					
Giulietta 1.4 TB 2011	/dʒuːliˈetə/	4360	1800	1470	11536,6
MiTo 1.3 JTDM 2011	/ˈmiːtəʊ/	4070	1730	1460	10280,0
Spider 2.0 JTS 2011	/ˈspaɪdə/	4310	1780	1320	10126,8
Brera 2.2 JTS 16V 2009	/ˈbrerə/	4420	1840	1350	10979,3
Aston Martin					
Cygnet 2011	/ˈsɪgnət/	3078	1680	1500	7756,6
DB9 Volante 2011	/vəˈlænti/	4720	1880	1270	11269,5
Rapide 2011	/rəˈpiːd/	5030	2150	1330	14383,3
Vantage V8 2011	/ˈvɑːntɪdʒ/	4390	1870	1260	10343,7
Virage Coupe 2011	/ˈvɪrɑːʒ/	4710	1910	1290	11605,0
Vanquish S V12 2009	/ˈvæŋkwɪʃ/	4670	1930	1340	12077,6
Bently					
Continental GT 2011	/kɒntɪˈnentl/	4810	1920	1400	12929,3
Mulsanne 2011	/mʊlˈsɑːn/	5580	1930	1530	16477,2
Azure 2009	/əˈzjʊə/	5420	1910	1500	15528,3
Arnage T 2009	/əˈnɑːʒ/	5410	1910	1520	15706,3
Brooklands 2009	/ˈbrʊklənds/	5410	1910	1520	15706,3
Buick					
Enclave 2011	/ˈenkleɪv/	5120	2010	1850	19038,7
LaCrosse 2010	/ləˈkrɒs/	5010	1860	1500	13977,9
Lucerne 2011	/lʊˈsɜːn/	5170	1880	1480	14385,0
Regal GS 2010	/ˈriːgl/	4831	1811	1473	12887,2
RAINIER CXL 4.2L (2007)	/ˈreɪniə/	4912	1915	1826	17176,2
Chevrolet					
Avalanche 2011	/ˈævəlɑːntʃ/	5630	2020	1950	22176,6
Aveo 1.2 2010	/ˈæviəʊ/	3930	1690	1510	10029,0
Camaro 2010	/kəˈmærəʊ/	4840	1920	1380	12824,1
Captiva 2.0 D 2011	/kæpˈtiːvə/	4640	1860	1730	14930,6
Colorado 2011	/kɒləˈrɑːdəʊ/	4890	1720	1650	13877,8
Corvette 2011	/kɔːˈvet/	4440	1850	1250	10267,5
Cruze 1.6 2011	/kruːz/	4600	1790	1480	12186,3
Equinox 2011	/ˈekwɪnɒks/	4780	1850	1690	14944,7
Impala 2011	/ɪmˈpɑːlə/	5100	1860	1500	14229,0
Malibu 2011	/ˈmælɪbuː/	4880	1790	1460	12753,4
Silverado 1500 2011	/sɪlvəˈrɑːdəʊ/	5230	2040	1880	20058,1
Spark 1.2 2010	/spɑːk/	3650	1600	1530	8935,2
Suburban 2011	/səˈbɜːbən/	5660	2020	1960	22409,1
Tahoe 5.3 2011	/ˈtɑːhəʊ/	5140	2010	1960	20249,5
Traverse 2011	/ˈtrævɜːs/	5210	2000	1860	19381,2
Volt 2011	/vəʊlt/	4500	1790	1440	11599,2
Cobalt 1LT 2010	/ˈkəʊbɔːlt/	4590	1730	1460	11593,4
Epica 2.0 2010	/ˈepɪkə/	4810	1820	1460	12781,1
Lumina SS 6.0 UTE 2010	/ˈluːmɪnə/	5060	1480	1850	13854,3
Trail Blazer 4.2 LT 2010	/ˈtreɪlbleɪzə/	4900	1910	1830	17127,0
Optra 1.6 L 2009	/ˈɒptrə/	4510	1730	1450	11313,3
Trans Sport 3.4 2008	/ˈtrænspɔːt/	5120	1850	1810	17144,3
Uplander Cargo Van 2008	/ˈʌplændə/	5200	1840	1840	17605,1
Monte Carlo 2006	/mɒntɪˈkɑːləʊ/	5000	1860	1420	13206,0
Chrysler					
Voyager 2.4 Family 2010	/ˈvɔɪɪdʒə/	4810	2000	1760	16931,2
PT Cruiser 1.6 Classic 2009	/ˈkruːzə/	4290	1750	1610	12087,1
Sebring LX 2.0 2010	/ˈsiːbrɪŋ/	4850	1800	1400	12222,0
Town & Country 2010	/ˈtaʊnənˈkʌntri/	5150	1960	1760	17765,4
Aspen 2008	/ˈæspən/	5140	1940	1880	18746,6
Crossfire 3.2 Roadster V6 LTD	/ˈkrɒsfaɪə/	4060	1770	1320	9485,8
Pacifica 2007	/pəˈsɪfɪkə/	5050	2020	1740	17749,7
Citroen					
Berlingo 1.4i 2007	/bɜːˈlɪŋgəʊ/	4110	1730	1810	12869,6
Nemo 1.4 2011	/ˈniːməʊ/	3970	2030	1740	14022,8
Xsara 1.4 HDi SX Plus 2011	/ˈzærə/	4190	1710	1410	10102,5
Picasso 1.6i HDi Exclusive 2008	/pɪˈkæsəʊ/	4280	1640	1760	12353,8
Multispace 1.4 2008	/ˈmʌltispeɪs/	4140	1730	1820	13035,2
Dacia					
Duster 1.6 2011	/ˈdʌstə/	4320	1830	1630	12886,1
Logan MCV 1.4 2011	/ˈləʊgən/	4460	1750	1640	12800,2
Sandero 1.2 Eco 2011	/sænˈdeərəʊ/	4030	1750	1540	10860,9

Model	Predicted RP Pronunciation	Length (mm)	Width (mm)	Height (mm)	Overall size (dm³)
Daewoo					
Matiz 0.8 S 2010	/məˈtiːz/	3500	1500	1490	7822,5
Nubira 1.6 SE 2010	/nʊˈbɪrə/	4510	1730	1450	11313,3
Rezzo 1.6 SX 2010	/ˈretsəʊ/	4360	1760	1590	12201,0
Evanda 2.0 CDX 2008	/ɪˈvændə/	4780	1820	1450	12614,4
Daihatsu					
Copen 0.7 2011	/ˈkəʊpən/	3400	1480	1250	6290,0
Materia 1.3 2010	/məˈtɪəriə/	3810	1700	1640	10622,3
Sirion 1.0 2010	/ˈsɪriən/	3610	1670	1560	9404,8
Terios 1.3 2008	/ˈteriɒs/	3850	1560	1720	10330,3
Charade CX 2007	/ʃəˈrɑːd/	3410	1480	1510	7620,7
Trevis 2009	/ˈtrevɪs/	3420	1500	1430	7335,9
Dodge					
Avenger 2011	/əˈvendʒə/	4900	1860	1490	13579,9
Caliber 1.8 L SXT 2009	/ˈkælɪbə/	4420	1750	1540	11911,9
Challenger 2009	/ˈtʃælɪndʒə/	5030	1930	1460	14173,5
Charger 2010	/ˈtʃɑːdʒə/	5090	1900	1480	14313,1
Dakota 2011	/dəˈkəʊtə/	5560	1830	1750	17805,9
Durango Crew 2011	/djʊˈræŋgəʊ/	5080	1930	1810	17746,0
Journey 2.0 2011	/ˈdʒɜːni/	4890	1880	1700	15628,4
Nitro 2.8 CRD 2010	/ˈnaɪtrəʊ/	4590	1860	1780	15196,6
Ram 1500 2010	/ræm/	5320	2020	1900	20418,2
Viper SRT-10 2011	/ˈvaɪpə/	4470	1950	1220	10634,1
Magnum 2008	/ˈmægnəm/	5030	1890	1490	14165,0
Caravan 2007	/ˈkærəvæn/	4810	2000	1760	16931,2
Stratus 2005	/ˈstreɪtəs/	4850	1800	1400	12222,0
Fiat					
Bravo 1.4 2011	/ˈbrɑːvəʊ/	4340	1800	1500	11718,0
Doblo 1.2 Trofeo 2011	/ˈdɒbləʊ/	4170	1720	1820	13053,8
Panda 1.1 2011	/ˈpændə/	3540	1600	1550	8779,2
Punto 1.2 2008	/ˈpʊntəʊ/	3850	1670	1490	9580,0
Qubo 1.3 Multijet 2011	/ˈkjuːbəʊ/	3970	1720	1740	11881,4
Strada 1.3 Multijet 2010	/ˈstrɑːdə/	4450	1670	1600	11890,4
Croma 1.8 2009	/ˈkrəʊmə/	4790	1780	1610	13727,2
Idea 1.2 Active 2009	/aɪˈdɪə/	3940	1700	1670	11185,7
Linea 1.3 Multijet 2009	/ˈlɪniə/	4570	1950	1500	13367,3
Multipla 1.6 Active 2009	/ˈmʌltɪplə/	4000	1880	1700	12784,0
Palio II 1.2 EL 2007	/ˈpælɪəʊ/	3830	1640	1440	9044,9
Siena II 1.2 EL 2007	/ˈsiˈenə/	3830	1640	1440	9044,9
Ford					
Edge 2011	/edʒ/	4720	1930	1710	15577,4
Escape 2011	/ɪˈskeɪp/	4440	1810	1730	13903,0
Expedition 2011	/ekspəˈdɪʃn/	5250	2010	1970	20788,4
Explorer 2010	/ɪkˈsplɔːrə/	4920	1880	1860	17204,3
Fiesta 1.25 2011	/fiˈestə/	3960	1730	1490	10207,7
Flex 2011	/fleks/	5130	2260	1730	20057,3
Focus 1.4 2011	/ˈfəʊkəs/	4340	1890	1500	12303,9
Fusion 1.25 2011	/ˈfjuːʒn/	4020	1730	1500	10431,9
Galaxy 2.0 2011	/ˈgæləksi/	4830	2160	1810	18883,4
Ka 1.2 2011	/kɑː/	3630	1660	1510	9099,0
Maverick 2.0i Highclass 2011	/ˈmævərɪk/	4420	1830	1780	14397,7
Mondeo 1.6 Ti-VCT 2010	/mɒnˈdeɪəʊ/	4850	2080	1510	15232,9
Mustang 2010	/ˈmʌstæŋ/	4770	1880	1410	12644,3
Ranger 2.3 2011	/ˈreɪndʒə/	4820	1770	1690	14418,1
Taurus 2011	/ˈtɔːrəs/	5160	1940	1550	15516,1
Transit Connect 2011	/ˈtrænzɪt/	1390	4590	1800	11484,2
Bantam 1.3i 2009	/ˈbæntəm/	4280	1470	1640	10318,2
Shelby GT 500 2009	/ˈʃelbi/	4770	1890	1390	12531,3
Streetka 1.6 2009	/ˈstriːtkɑː/	3660	1690	1350	8350,3
Ikon 1.3i L 2007	/ˈaɪkɒn/	4150	1640	1390	9460,3
Freestar 2007	/ˈfriːstɑː/	5110	1950	1800	17936,1
Freestyle 2006	/ˈfriːstaɪl/	5100	1900	1530	14825,7
Territory 4.0 Ghia Automatic 2007	/ˈterətri/	4860	1720	1900	15882,5
Van E-150 2007	/ˈvæn/	5390	2020	2060	22428,9
Wagon E-150 Chateau 2007	/ˈwægən/	5390	2020	2060	22428,9
Crown Victoria 2006	/ˈkraʊn vɪkˈtɔːriə/	5390	2000	1490	16062,2