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ABSTRACT

A study investigated the extent to which English compound nouns are problematic for learners of English as a second language and identifies some causes of this comprehension difficulty. Subjects were 34 university students, of widely varying language backgrounds, in courses in English for academic purposes. Each was administered an instrument designed to measure comprehension of both real and invented English compound nouns. For each compound noun, a range of possible definitions, including distractors, was offered. Results suggest that the comprehension of some compound nouns is problematic because their idiomatic and syntactic opacity, in the absence of culture-specific pragmatic knowledge, constrains the identification of deleted elements. However, when the learner has sufficient exposure to the language, these difficulties are overcome readily. There is also evidence that learners use figurative strategies in dealing with idiomaticity. It is concluded that comprehension problems faced by learners of English as a second language encountering compound nouns may be very similar to those faced by native speakers. (Contains 35 references, 5 tables, and 4 figures.) (MSE)

Compound Nouns and the Acquisition of English Neologisms.

J. Charteris-Black

Abstract

As compounding is a source of many English neologisms, this study investigates the extent to which compound nouns are problematic for learners of English and identifies some causes of comprehension difficulty. An elicitation instrument is developed to access the influence of idiomatic and syntactic features and lexical novelty on the comprehension of compound nouns.

The findings are that the comprehension of some compound nouns is problematic because their idiomatic and syntactic opacity - in the absence of culture specific pragmatic knowledge - constrains the identification of deleted elements. However, when there is sufficient exposure these difficulties are readily overcome. There is also evidence that learners use figurative strategies in dealing with idiomaticity.

The formation of opaque compound nouns involves a metaphorical process in which secondary meanings of the two elements are transferred to the compound form; in such cases, identification of premodifier and headnoun is unlikely to assist learners as there is bi-directionality of transfer. Learners should not assume that primary meanings are transferred, should look for idiomatic meaning in both elements, and identify the directionality of modification, where it exists, if they are to succeed in compound noun comprehension.

Introduction

Compound neologisms such as *rent boy, road rage, Gulf syndrome,* and *serial killer* are usually understood by native adult readers of the British press but what sort of difficulties might they present to second language learners of English? Arnaud & Savignon (in Coady & Huckin 1997: 158) comment that complex lexical units require special attention by L2 learners of English since:

> Even though learning 3,000 words provides comprehension of 95% of occurrences, the remaining 113,000 words in Nation's (1990:16) count still pose a formidable problem.

Although research suggests that a knowledge of complex lexical units is necessary for advanced learners' receptive competence, the literature (apart from mnemonics) is generally poor on the subject of learning strategies for words beyond the first two or three thousand (Arnaud & Savignon in Coady & Huckin 1997:159). This is, perhaps, surprising given that compounding is one of the most productive means of creating new words in English. An analysis of the Longman Register of New Words Vol. 1 shows that it accounts for 39.8% of new words (Ayto, in Anderman 1996:65) while a similar analysis of the Macquarie Dictionary of New Words shows that it can account for as many 54.5% (Butler, in Ayto, in Anderman 1996:66). Given, therefore, that compounding is a highly productive process of word formation, it is important to consider the types of difficulties which learners may encounter with such words and the sort of solutions they find to them.

Linguistic Characteristics of Compound Noun Formation

In this paper the term *compound noun* is preferred to *complex nominal* as we are concerned with lexical items with two roots whereas the latter term also includes those with more than two roots. The process of compounding is one whereby two different words are brought together to form a new word. In most compound nouns the compound means more than the sum of its parts, and some authorities take this as their defining feature: 'If the meaning of the whole cannot be deduced from the meaning of the elements separately, then we have a compound' (Jesperson 1942:137). It is worth noting that this definition for compound nouns is very similar to other definitions of an idiom:

> A sequence of words which is semantically and often syntactically restricted so that it functions as a single unit. The meanings of the individual words cannot be combined to produce the meaning of the idiomatic expression as a whole. (Crystal 1992: 180)

Clearly compound nouns, like idioms, are characterised by non-compositionality. However, Levi (1978: 64) argues that compound nouns vary in the extent to which they rely on idiomatic meaning and that there is a scale ranging from fully transparent to fully opaque meaning. As Fernando (1996:31) points out a number of scholars have used scales to represent idiomaticity.

The structure of compound nouns usually requires a premodifier and a head noun. The function of the premodifier is to classify the head noun. Linguists, such as Levi (1978) and Zimmer (1972), have noted that the semantic role of the modifier is to isolate some truly distinctive feature of the headnoun which can lead speakers to make

appropriate classifications; there normally needs to be some permanent or habitual association between the premodifier and the headnoun. For example, a *darkroom* is a room that is habitually darkened for the purpose of photography and a *serial killer* is a person who murders habitually. But issues of habit are relative ones: how frequently do instances in which two elements are related have to occur in order for this association to require a linguistic sign? It is only through their conventional knowledge of what is permanent or habitual that native speakers share a perception of the association between two otherwise unrelated elements.

A further characteristic of compound neologisms is that they may represent actions as nouns - a process of nominalisation which Halliday (1985) refers to as grammatical metaphor - for example, the violent actions associated with driving disputes has become nominalised in the compound neologism *road rage*. Many media generated compound neologisms encode such processes and in doing so aspire to give them the tangible reality of nouns.

A further important consideration is the diachronic issue of how recently a word has entered the language; in this respect we can distinguish between novel compounds (e.g. *road rage*) and established compounds (e.g. *blackmail*). Orthographic criteria provide insight into diachronicity: novel compounds are usually written as two separate words, whereas established compounds are written as a single word; often there is a period of hyphenation prior to full compounding, for example we have *anti-hero* but *antibiotic*. The instability of orthography shows in inconsistency among dictionary writers; for example, Webster's Hypertext (1997) has *best seller*, Cobuild (1988) has *best-seller* and Chambers (1988) has *bestseller*. As compound nouns

become more established, there is a greater likelihood of the two elements becoming orthographically conjoined, although this is unlikely to effect their phonological pattern with primary stress remaining on the first element, (e.g. *`rent boy `bootleg).* Phonological stress remains the best rule of thumb to test for compound nouns.

Factors Influencing the Comprehension of Compound Nouns

Native Speaker Research

Research into the comprehension of compound nouns by native speakers has identified their frequency and their potential for ambiguity: as Swales (1974: 129) puts it: 'The more technical and specialised the subject, the more frequent and more complicated the compound nouns'. In particular, novel compound forms require sophisticated semantic decoding (Gleitman & Gleitman in Lehrer, 1996: 71). Gerrig & Murphy (1992) claim that the interpretation of novel compound nouns by native speakers relies on the formation of complex concepts; these work by activating knowledge structures to infer the relation between the two elements. According to Bhatia (1992), native speakers encounter comprehension problems with complex nominals used in academic and professional writing; these have the dual purpose of identifying technical concepts with precision and clarity while serving to keep non-specialists at a distance. Limaye & Pompian (1991) found that nominal compounds caused comprehension problems in business and technical prose due to a failure by learners to identify the correct headword. Identification of the correct headword was also found to be a problem by Gerrig & Murphy (1992). This brief survey of the research on native speaker comprehension therefore leads us to anticipate that second language learners may also have difficulties in comprehending compound nouns.

Idiomaticity

In traditional models of L1 comprehension (e.g. Grice 1975 or Searle 1975) figurative meaning violates one of the maxims of communication and therefore requires additional cognitive effort as 'listeners work out in a series of steps the implicatures behind any utterance where the intended interpretation deviates from its literal meaning' (Gibbs 1994:82). In these models, idiomatic meaning is accessed *after* the rejection of literal meaning (see figure one).

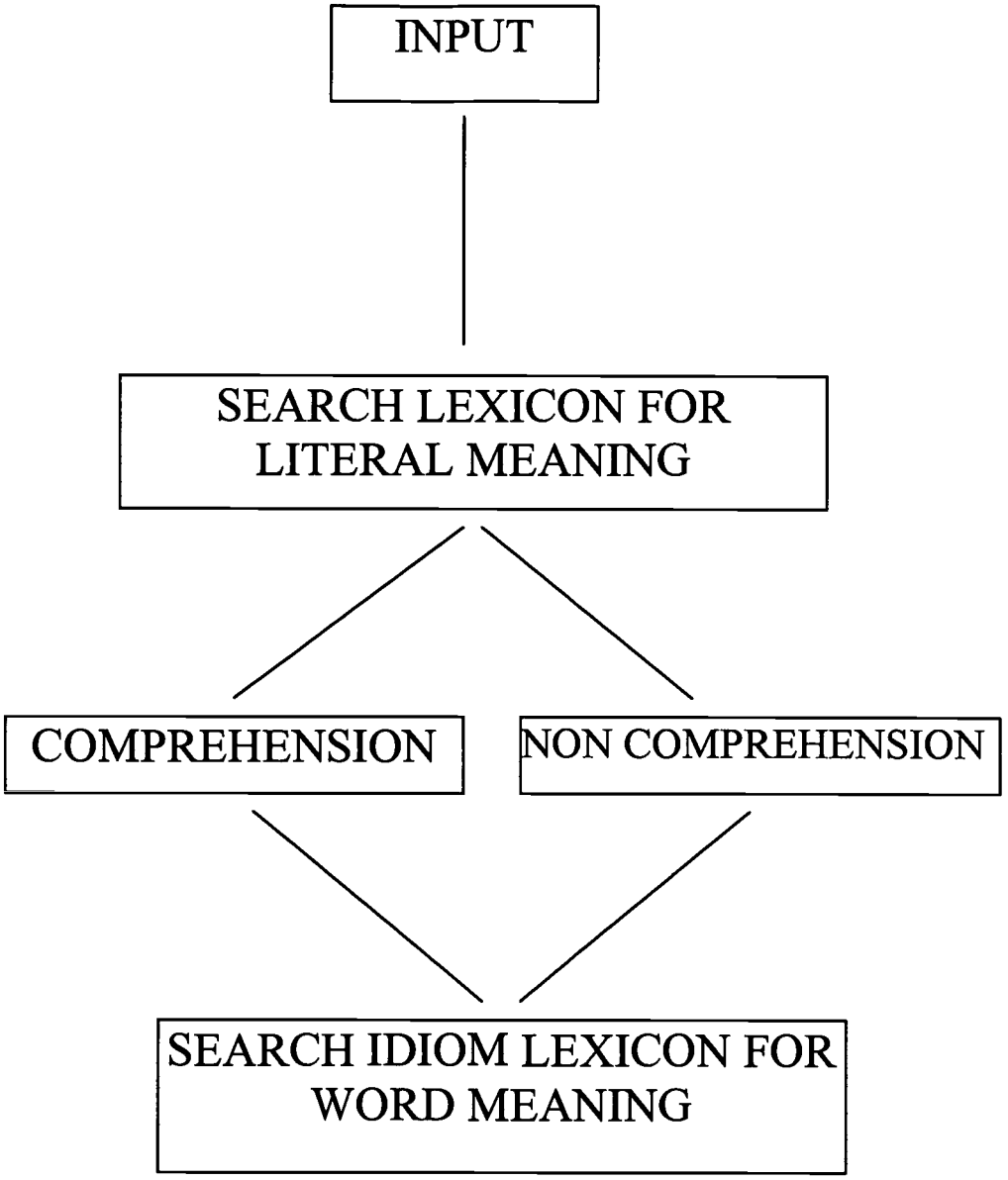

Figure 1: Comprehension of Idiomatic Meaning: The Traditional Model (Bobrow & Bell 1973, Weinrich 1969)

However, more recent research into the comprehension of idioms by native speakers offers two alternative models each of which contradicts the traditional model: first that idiomatic meaning is accessed in *parallel* with literal meanings- this is known as the lexicalisation hypothesis (Swinney & Cutler 1979). (See figure two).

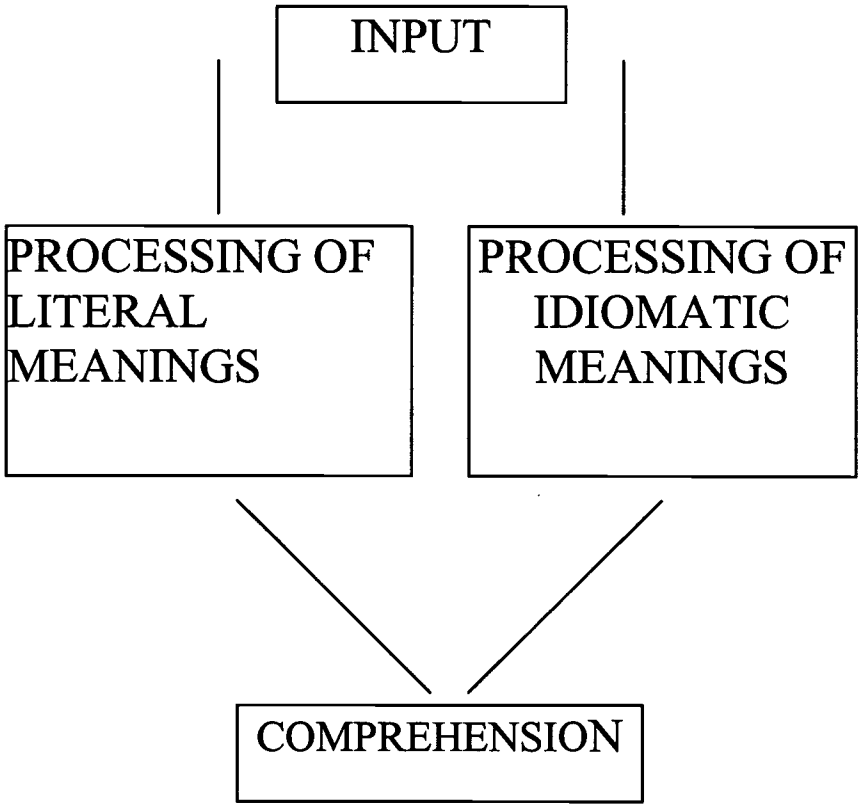

Figure two: Comprehension in the Lexicalisation hypothesis (Swinney & Cutler 1979)

Alternatively, idiomatic meaning is accessed *directly* (Gibbs 1980, 1985a, 1986d), this is known as the direct look-up model. (See figure three) and literal meaning is only looked for *after* idiomatic processing has failed

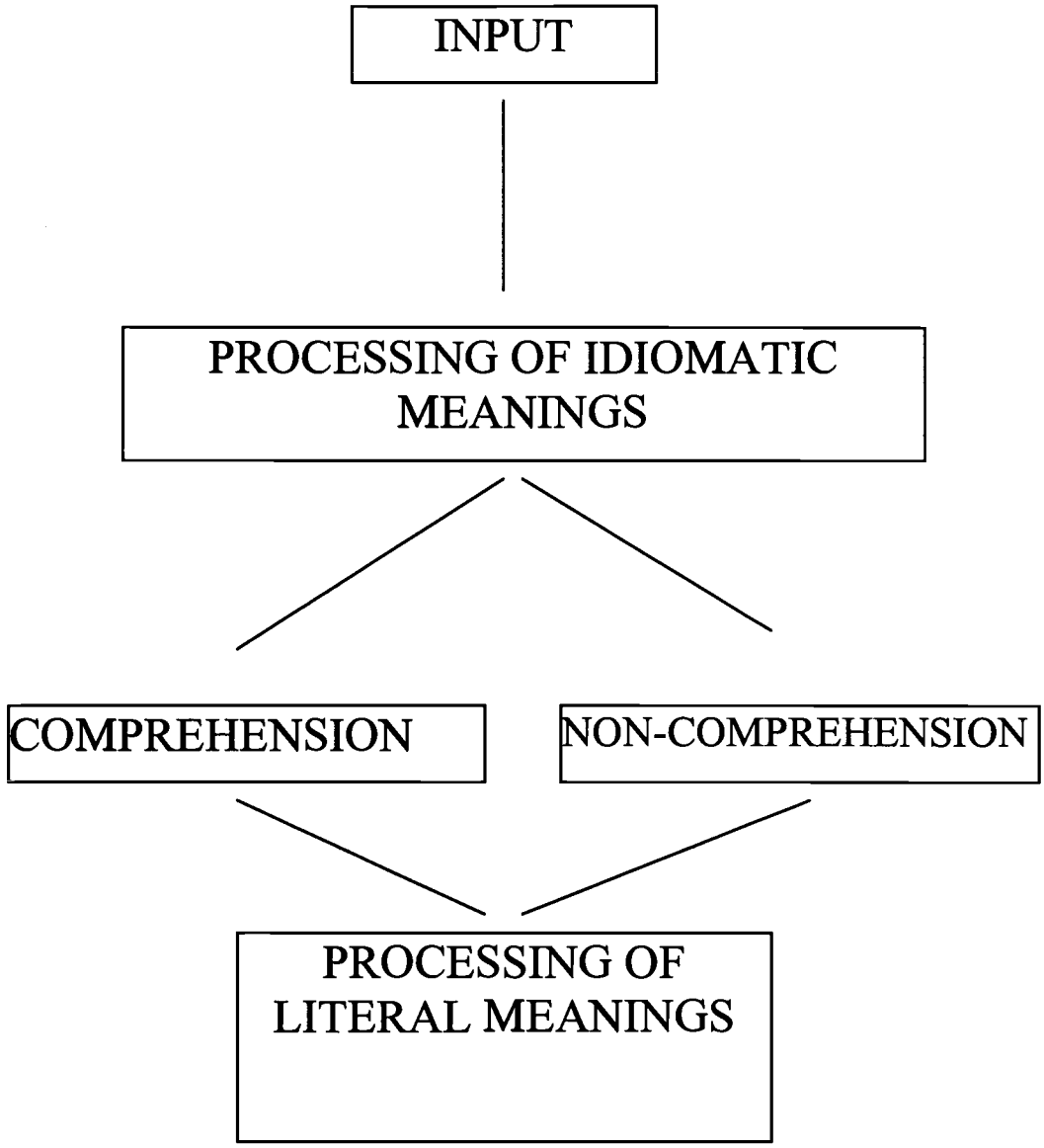

Figure 3: Comprehension of Idiomatic Meaning: The Direct Access Hypothesis (Gibbs, 1980, 1985a, 1986d)

The lexicalisation hypothesis implies that idiomatic and literal meanings contribute equally to comprehension; while the direct access hypothesis implies that idiomatic meaning can be accessed directly and that literal meanings will only be looked for if idiomatic meanings do not lead to comprehension. This would cause problems for L2 learners trained to give priority to literal meanings over idiomatic ones.

Syntactic Factors

Apart from idiomatic use, there can be syntactic problems in working out the precise relationship between the two elements; this is because the syntactical indicators of their meaning, which would be present in an equivalent phrasal form, are deleted in a lexicalised form. Problems with neologisms may be caused by failure to identify the deleted element; for example, *car crime* could mean *a crime in which a car is used* rather than *a crime which is committed on a car*, and *gay hatred* could mean *hatred felt by gay people* rather than *hatred of gay people*. In all these cases the deletion of a preposition has the effect of creating ambiguity.

Syntactic features of compound forms are likely to pose great semantic problems for second language learners who may be unaware of the syntactic relationships of the elements, and therefore create a cognitively plausible, but inaccurate, concept. They may lack the culture-specific knowledge to provide the semantic basis for an interpretation which can enable them to supply deleted syntax. Clearly, such problems may also be related to lexicalisation difficulties with novel compound nouns.

Lexical Novelty

One of the problems faced by native speakers and learners alike is that the complexity of modern life continually requires an expanding number of words to refer to developments in an increasing range of registers. The growth of specialisation in advanced technological societies has led to the creation of a host of technical and semi-technical registers. As far as the media is concerned, the highly productive process of compound noun creation is motivated by a need to be appearing to keep up

with modernity. However, lexicographers continually face the problem of deciding at what point a word can be worthy of a dictionary entry: how frequently is it used, over what period of time and in what contexts? Downing (1977: 45) argues that 'compounding ... serves as a back door into the lexicon' and that a particular interpretation of a compound noun simply becomes institutionalised. A major influence on lexical comprehension is exposure: clearly we are more likely to understand institutionalised words to which we have been exposed over a period of time as compared with recent coinages.

As mentioned above, *'road rage'* was coined to refer to acts of violence which are motivated by *rage*, and their most salient characteristic is that they occur on the road. Because *road* functions as a metonym for 'driving dispute', it is only by inference (based on a knowledge of specific occurrences) that we may interpret this grammatical metaphor as 'the actions and behaviour associated with a driving dispute'. If the first occurrence of such an incident were unknown, the semantics of the word could equally refer to rage felt towards a fellow passenger, a 'back-seat driver' perhaps? Or to rage about traffic jams, car breakdowns, drinking and driving, road accidents or any other of the multiple problems associated with road use. If we think of subsequent media coinages such as *trolley rage* to describe an argument sparked off by a collision involving shopping trolleys, we can understand the importance of the initial context in which a novel compound is used.

In summary, there are idiomatic, syntactic and lexical novelty factors which may lead to comprehension difficulties for learners of English according to where the particular compound form is located on a scale of semantic opacity - influenced by idiomatic

and syntactic factors - and a scale of lexical novelty. These lead to the following research questions:

1/ Do L2 learners of English encounter comprehension problems with compound nouns and compound neologisms?

2/ What do the interpretations they give to compound nouns tell us about the causes of comprehension problems?

Research Method

Selection of a sample and development of a research instrument.

Initially, a manual search was made to select a sample of novel compound nouns which appeared to occur frequently in the headlines of the Independent newspaper. These impressions were then measured against CD Roms containing the full contents of the *Independent* newspaper for the years 1994, 1995 and 1996. Twenty-seven items were selected on the basis that they should occur in texts at least ten times during this period (see table one below).

Table 1: Sample of Compound Nouns Found in the Independent Newspaper (1994-6)

Compound	1994	1995	1996	TOTAL
1. blackmail	148	156	181	529
2. road rage	1	40	118	159
3. shanty town				
4. road hog				
5. callgirl				
6. mad cow				
7. bootleg				
8. car crime				
9. playboy				
10. information superhighway				
11. junk food				
12. blackmarket				
13. jailbird				
14. hate crime				
15. gay hatred				
16. urban planner				
17. Euro-sceptic				
18. honeymoon				
19. serial killer				
20. kerb crawler				
21. sweatshop				
22. rent boy				
23. banana republic				
24. war criminal				
25. spin doctor				
26. kangaroo court				
27. fat cat				

It was important to establish criteria for determining lexicalisation; this depends on a statistical sampling of a corpus of language. In this study the Independent data were measured against the Webster's Hypertext and Chambers dictionaries; words that did not occur in either dictionary were classed as novel and therefore not fully lexicalised; words occurring in the both dictionaries were classed as established; words which appeared in one dictionary but not were classed as semi-established. Evidence to confirm this measure of lexical novelty can be seen with reference to items numbers 1, 4, 8, 9, and 10, in table one which show a rapid increase in frequency in media compound neologisms during this period.

It should be noted that the speed with which language changes means that there is inevitably a time lag between when a word could be said to be lexicalised by native speakers and when it will occur in dictionaries. For example, a measure of the frequency of the word *road rage* in newspapers published in 1994 would suggest that it is not lexicalised whereas the frequency for 1996 would suggest that it is. This is evidence that there is as much a scale of lexicalisation as there is a scale of idiomatic and syntactic opacity.

A further question regarding vocabulary comprehension is the extent to which learners are able to recognise English words; for this reason three compound words were invented following the processes of compound noun formation outlined above and added to the sample; these were *blueheart, music cruiser* and *talkman.* The reason for the inclusion of these items was to identify which of the criteria identified above as likely to influence the comprehension of compound nouns would be used in interpreting these invented words. It should be noted that Meara (1987) claims that the

ability to recognise whether or not words exist in English correlates highly with other measures of linguistic proficiency.

The next stage was to devise an elicitation instrument to gauge the comprehension of these items. It was decided that a multiple choice format would be the most appropriate because this type of task is intended to measure a receptive knowledge. As Paribakht and Wesche (1997:183) point out, in recognition exercises learners are only asked to match the target word with a definition or synonym; this was thought to be an appropriate task as learners of English would only normally be expected to have a partial knowledge of novel compounds. One criticism of presenting decontextualised lexis is that it is an inadequate means of measuring lexical proficiency; but the intention of this study is to explore some of the factors influencing the comprehension and interpretation of English compound nouns. In this respect incorrect selections may provide us with as much insight as correct choices. We might also recall that novel compound nouns are frequently found in a fairly decontextualised form in newspaper headlines.

The compound nouns were presented as single words (following their normal orthographic form as regards whether the two elements are separate, hyphenated or joined) and a range of possible definitions offered. Distracters were devised to access the three factors motivating the formation of compound nouns and may influence comprehension: syntactic, idiomatic and lexicalisation considerations. For example, as regards establishing the syntactic relationship between the two elements, some distracters required the identification of a deleted preposition so that *car crime* could be interpreted as a) *a crime committed **in** a car*, b) *a crime committed **by** or **with** a*

car or c) *a crime committed **to** a car*. Other distracters required the identification of subject and predicate; for example, *rent boy* could mean a) *a boy who **rents** or* b) *a boy who **is rented.*** Items in which the syntactic relationship between the two items is not clear are described as syntactically opaque.

As regards idiomatic meaning, the principle in devising distracters was, in some cases, to use literal meaning where an idiomatic meaning was the correct one; for example, *call girl* could be interpreted wrongly as *a prostitute who is a girl* or correctly as *a female prostitute*. In other cases, idiomatic meanings were used in distracters where the literal meaning would be correct; for example, the distracter for serial killer was *an actor who often plays the part of a killer*. A third strategy was to reverse literal and figurative meaning; for example, in the distracter for *jailbird: a bird which is kept in a cage* a figurative meaning is given to the first element (cage for jail) and a literal meaning is given to the second element; in fact, the first element (jail) should be interpreted literally and the second element (bird) figuratively. Compound nouns in which there is a figurative meaning in either element are described as idiomatically opaque. 'Is not an English word' was used for the last option for each test item. Table two summarises the criteria which may influence the comprehension of the compound nouns used in this study.

Table 2: Potential Factors Influencing Compound Noun Comprehension

Compound n=30	Syntactic Opacity	Idiomatic Opacity	Lexical Novelty
Euro-sceptic	-	-	++
honeymoon	+	+	-
blackmail	-	+	-
mad cow	+	+	++
playboy	+	+	-
serial killer	-	-	++
information superhighway	+	+	++
fat cat	-	+	++
road rage	+	-	++
spin doctor	+	+	++
war criminal	+	-	-
junk food	+	+	+
bootleg	-	+	-
car crime	+	-	++
shanty town	+	+	-
sweatshop	+	+	-
rent boy	+	+	
callgirl	+	+	-
banana republic	+	+	+
kangaroo court	+	+	-
jailbird	+	+	-
road hog	+	+	-
blackmarket	-	+	-
kerb crawler	-	+	+
urban planner	-	-	++
hate crime	+	-	++
gay hatred	+	-	++
talkman			**
blueheart			**
music cruiser			**

Key:

+ Indicates that the feature is present.
++ Indicates that the feature is lexicalised in both source dictionaries.
- Indicates that the feature is not present
** Invented word

Both correct and incorrect answers were analysed - in particular those answers where more subjects selected a distracter than a correct response.

Subjects

The thirty-four participants in this study were tertiary level students following EAP language support classes offered by the University of Surrey in the academic year 1996-1997. They come from the following fifteen language backgrounds:

Bulgarian	1
Chinese	6
French	2
Greek	1
Italian	1
Japanese	3
Korean	2
Mandingo	1
Portuguese	2
Tamil	3
Temne	1
Thai	3
Slovak	1
Spanish	4
German	3

A separate sheet on the questionnaire elicited the following information as regards the sample: 76% reported spending three or more hours a week reading English and the

majority had more than four hours of contact with native speakers of English in a week. The most favoured strategies for dealing with unknown words in their reading were to guess the meaning of the word and carry on reading (71%) and to look up the word in a dictionary (76%). These figures suggest that both strategies are used by in different situations.

Results

The method for calculating the results was to add up all the correct responses and to calculate the percentage of students obtaining correct responses for each test item. This produced a facility index for each item. Items with a high facility index are those with which respondents had fewer comprehension problems; those with a low facility index are items with which respondents had more comprehension problems. The results are shown in tables three and four below.

Table 3: Results: Comprehension of Compound Nouns

rank	Item (n=30)	correct answers (max. =34)	facility index
1=	playboy	34	100%
1=	honeymoon	34	100%
3=	blackmarket	28	82%
3=	callgirl	28	82%
5	serial killer	27	79%
6=	blackmail	26	76%
6=	urban planner	26	76%
8	information superhighway	24	71%
9	road rage	23	68%
10=	road hog	21	62%
10=	mad cow	21	62%
12	gay hatred	20	59%
13=	sweatshop	18	53%
13=	junk food	18	53%
15	banana republic	17	50%
16	Euro-sceptic	16	47%
17	jailbird	15	44%
18	car crime	14	41%
19=	rent boy	13	38%
19=	fat cat	13	38%
21	hate crime	11	32%
22=	war criminal	10	29%
22=	shanty town	10	29%
24=	bootleg	7	21%
24=	kerb crawler	7	21%
24=	kangaroo court	7	21%
27	talkman	7	20%
28	spin doctor **	5	15%
29=	blueheart **	2	6%
29=	music cruiser **	2	6%

** Invented word

Table 4: Summary Statistics for comprehension of compound nouns according to linguistic features

Variable	Mean	facility index	SD
Syntactically opaque (n =19)	18.1	53 %	24.1
Idiomatically opaque (n =19)	18.2	54 %	26.5
Novel (n =11)	17.0	50 %	20.4
Semi-established (n = 4)	13.4	40%	_*
Established (n =12)	19.8	58%	25.3
Lexical creations (n = 3)	5.3	16%	_*
OVERALL MEAN (n = 30)	16.8	49%	24.1

*Not calculated as n is too small.

Discussion

In the discussion, the approach will be, initially, to compare the quantitative data for each of the candidate variables for factors influencing the comprehension of compound nouns and then to discuss responses to particular elicitation items grouped according to the potential factors influencing comprehension: idiomaticity, syntax and lexical novelty.

Regarding the first research question, there is evidence that learners encounter comprehension problems with the compound nouns in this study as there is a mean facility index of less than 50%. It is not possible to say with certainty whether these problems are more or less than those for uncompounded lexis. The summary statistics (table four) clearly show little difference in the facility index for idiomatically and syntactically opaque items.

The similar results for the different variables suggests that it may not be possible, or revealing, to compare, for example, an idiomatically opaque and lexically novel item like *fat cat* with a syntactically opaque and lexically novel item like *road rage*. The high standard deviation figures suggest considerable difference among the items measuring the same variable; this implies that opacity and novelty are scalar rather than binary.

There may also be an interaction effect between these variables which causes comprehension problems. If this is the case we would anticipate a lower facility index

for items exhibiting more variables than on items exhibiting fewer variables and we can see from table five (below) that this is in fact the case:

Table 5: Number of Variables and Compound Noun Comprehension

Number of Variables	Mean Score	Facility Index
ONE * (n= 7)	20.0	59%
TWO (n=14)	17.7	52%
THREE (n=6)	16.3	48%

*Excludes results for invented words.

The group of words with which learners evidently encountered greatest difficulty were the invented words, with a facility index of only 16%. It is perhaps not surprising - given that the number of English words that most speakers of English don't know far exceeds those which they do - that they are reluctant to select option e) 'Is not an English word' for these invented items. Where the referents themselves (as described in the distracters) are known but not the L2 linguistic forms, a gap in L2 knowledge seems more plausible than a lexical gap in the target language.

While the quantitative data provide evidence that the variables identified do impinge on the L2 comprehension it is not possible to establish the relative contribution of each variable; it is more likely that a more qualitative analysis of the responses themselves, grouped according to variable, will be more revealing in this respect.

Idiomaticity

Idiomatic opacity was a factor in causing comprehension problems: there was a facility index of less than 40% for *kerb crawler, kangaroo court, fat cat, spin doctor,*

& *bootleg*. We can propose three reasons for this: difficulties in the identification of underlying associations between elements; failure to detect the directionality of semantic transfer and absence of culture-specific knowledge, although, in practice, it is likely that these factors interact with each other.

Awareness of an association between two words that are not normally associated may cause comprehension problems because they are from different lexical frames (Lehrer 1973), that is they encode knowledge about quite separate stereotypical objects and situations. The motivation for such compounds is usually to fill a lexical gap by drawing on words from previously unrelated domains to produce a neologism. One of the difficulties faced by L2 learners of English neologisms may be in activating the same conceptual set of semantic associations for each of the elements of a compound noun as would be activated by native speakers.

When applied to *spin doctor* this means that *to spin* as in *the action of a spider drawing out a thread* is likened to *doctoring* in the verb sense of *tampering or adulterating*. It is the transfer of these meanings that produces the paraphrase of *spin doctor* as 'someone who uses the media to deceive the public by presenting a favourable image of a politician'. Figure five shows this transfer of meaning:

spin:

1. To draw out, and twist into threads.

2. To move round rapidly; to whirl; to revolve about its axis.

3. To protract; to spend by delays; as, to spin out the day in idleness.

4. To draw out tediously; to form by a slow process.

5. To form (a web, a cocoon, silk, or the like) from threads produced by the extrusion of a viscid, transparent liquid, said of the spider, the silkworm, etc.

6. (Mech.) To shape, as malleable sheet metal as in a lathe.

doctor

1. A teacher; one skilled in a profession, or branch of knowledge, learned man.

2. An academic title, one who has taken the highest degree conferred by a university.

3. A member of the medical profession; a physician.

4. Doctor v. t. To treat as a physician does; to apply remedies to; to repair.

5. To confer a doctorate upon; to make a doctor.

6. To tamper with and arrange for one's own purposes; to falsify; to adulterate; as to doctor election returns.

Figure 4: Webster's Hypertext Meanings for *Spin* and *Doctor*

We should notice, however, that meanings five of *spin* and meaning six of *doctor* are transferred to the compound meaning so that is is a combination of secondary, non-critical meanings of the two elements. There is probably also activation of semantic associations from cricket with the deceptive nature of spin as in *spin bowling* although Webster's does not indicate that *spin* can be a noun.

The comprehension difficulty is first in knowing **which** of the semantic features of each element to transfer; this is because some critical meanings may be excluded (e.g. meaning one of *spin* and meanings one to five of *doctor*)- so the compound meaning relies on a **partial** and **selective transfer** of meanings; comprehension of the

idiomatic compound neologism may require certain critical meanings to be suppressed and other non-critical meanings to be selected.

A further comprehension problem with idiomatic compounds is the assumption that there is uni- directionality transfer of meaning. For example, 38% chose the definition for *spin doctor* as *Someone who gives medical advice without being qualified to do so*; this implies a strategy of searching for literal meaning in the second element and, therefore an assumption of premodification. Yet with opaque compound nouns there may be bi-directionality of meaning transfer as implied by the following definition of an idiom:

> A phraseological unit involving at least two polysemous constituents, and in which there is a **reciprocal** contextual selection of subsenses will be called an idiom. (Weinrich 1969:42) (my bolding)

In the case of *spin doctor* a subsense of *doctor* as well as subsenses of spin are transferred to the compound meaning.

However, items such as *honeymoon* and *playboy* which are fully idiomatic do not necessarily cause comprehension problems when there is sufficient exposure and when they refer to culturally less restricted concepts as indicated by the 100% facility index for these items. Figurative meaning should not be problematic if learners transfer their L1 knowledge of idiomaticity. Evidence that they do this is found in the interpretations placed on invented words where they assumed one of the elements was used figuratively. For example, only one respondent chose the definition for *talkman* of *a person who talks a lot*; while each of the other options which include an element of figurative meaning were equally popular. For *blueheart* 44% of respondents chose *a person who is depressed*; this also indicates that learners search for the figurative

association between the colour blue and the emotion of sadness. These results suggest that learners do look for figurative meaning in idiomatically opaque compound nouns. In this respect there is support for the direct access and lexical representation hypotheses that idiomatic meaning is accessed directly or simultaneously rather than after literal meanings have been rejected.

It is probably only through access to a culture specific conceptual system that a relation between secondary meanings, or subsenses, can be established; interpretation depends on the culture-specific, stereotypical knowledge of the social perceptions, for example of doctors and politicians and cricket. We can also see the absence of culture-specific pragmatic knowledge in the interpretation of *kerb crawler* where 30% chose the meaning 'Machine for cleaning the side of the road'; similarly, 30% chose for *rent boy* the meaning 'a boy who is paid for doing odd jobs'; in both cases there is an absence of pragmatic knowledge. Culture specific knowledge of how to interpret euphemism usually enables native speakers to infer the correct meanings in either case.

Syntax

While the overall results for this variable were inconclusive there was some evidence that syntactically opaque compound nouns caused comprehension difficulties; the following items had a facility index of less than 50%: *car crime, hate crime,* and *war criminal.* The association between idiomatically transparent elements is not clear in some situations where syntax has been deleted leading to syntactic opacity. For example, 30% of respondents thought *car crime* is *any crime in which a car is used* and 25% accepted it as *a type of driving offence*; 34% of respondents paraphrased *war*

criminal as *someone who is held prisoner during a war*. The comprehension of such compound nouns requires the replacement of syntactic elements which are missing so that the relationship between the two elements is clarified in a full paraphrase. These are similar to the problems with novel compounds faced by native speakers:

> Although there are different proposed underlying structures to account for the different meanings and referent of compounds, there is no way to know, once the relating material of the predicate is deleted, from which underlying structure a compound in derived. Ryder (1994:27)

We can see that when the exact concept to which the word refers is unclear and in the absence of syntactic clues, learners rely entirely on contextual inferencing. Clearly, if this is a problem for native speaker comprehension it is likely to be all the more so for second language learners of English.

Lexical Novelty

We can see that a number of items presented few comprehension difficulties in spite of syntactic or idiomatic opacity, these include: *playboy (100%), honeymoon (100%), blackmarket (82%), callgirl (82%), blackmail (76%),* and *road hog (62%);* this is probably because they are established compounds which have become part of the mental lexicon as a result of frequent exposure. Interestingly, a number of novel compounds did not cause learners much difficulty either; these include *information superhighway (71%), road rage (68%), mad cow (62%), urban planner (76%)* and *serial killer (79%)*. The absence of any significant difference in the facility index for established and novel compounds implies that novelty is not in itself a problem when is compensated for by sufficient exposure. Although learners may not have come across novel compounds in formal learning situations, they clearly have acquired a large number of them through their exposure to the media and interaction with native

speakers. The semi-established compounds caused more comprehension difficulties: *junk food* (53%), *rent boy* (38%), *banana republic* (50%) and *kerb crawler* (21%); this is probably because exposure was not sufficient to compensate for the culture-specific pragmatic knowledge required to understand these compounds. It should be noted that none of these items occurred more than a hundred times in the Independent sample and none were ranked in the top ten most frequent items (see table one).

Given that there is little difference between the facility indices for each of the linguistic factors identified (table three) there appears to be no single factor which is more important than the others in influencing comprehension; indeed what appears to be most problematic for learners is that there are a combination of interacting factors which make for greater complexity of processing. We have seen (table five) that as the number of variables increase there is increasing comprehension difficulty and it may not be possible to separate the effect of these variables: many compounds involve overlapping features of syntactic deletion, idiomaticity and lexical novelty all of which are more or less present rather than completely present or absent.

Pedagogic Implications

One option would be to leave compound nouns out of general English courses since, as we have seen, exposure in a target language setting facilitates acquisition. However this would be to ignore the potentially motivating effect of learning compounds occurring with high frequency in the media. It is also likely that those requiring access to technical and semi-technical registers would benefit from formal instruction.

A different pedagogic procedure should be adopted for syntactically and idiomatically opaque compounds nouns; in the case of syntactically opaque compound nouns a complete paraphrase should be adequate to provide the meaning of the full form; for example, that *car crime* means *the crime of stealing or breaking into cars* or *war criminal* means *someone who breaks the rules of war*. In these cases the meaning of the separate elements contributes to the meaning of the compound.

Conversely, in the case of idiomatically opaque compounds it may be preferable - at least until advanced level - NOT to draw attention to the literal meaning of the separate elements since this is likely to impede direct access to the compound meaning. As we have seen, some compounds are formed by the selection of non-critical meanings that learners are unlikely to know and drawing awareness to the primary meanings is likely to constrain figuratively based strategies which learners may otherwise employ. Not only may this be unnecessary but it may also increase processing load. Dictionaries do not specify associative meanings and it should be emphasised to learners they should be prepared to find idiomatic meaning in **both** elements of the compound (as in this example) rather than in any single element. transfer.

Developing an awareness of the type of syntactic deletions which can occur, and the culture specific values which are reflected in the choice of metaphor and euphemism, may enable advanced learners to gauge the plausibility of possible meanings for unfamiliar compound nouns. Given the increased use of compounding as a source of new words this is a vital skill. Attention to the particular linguistic processes which underlie compound noun formation can raise advanced learners' confidence in

guessing the meaning of unfamiliar lexis- in much the same way as native speakers do when they first encounter these items. This will encourage them to become more autonomous learners - able to create their own networks of lexical association - and even to use language creatively by coining their own words to fill gaps in their lexical knowledge. In this way the teaching of compound noun formation can enhance what has become known in the second language acquisition literature as strategic competence (Canale & Swain 1980, Faerch & Kasper 1983, Bialystok 1990).

Conclusion

We have seen that second language learners encounter comprehension problems with compound nouns and that idiomatic, syntactic and lexicalisation factors may influence their comprehension. They may encounter problems due to any one of these factors but are more likely to encounter difficulties when they are in combination. However, the successful comprehension of established and novel compound nouns to which they are frequently exposed and their natural tendency to look for figurative meanings in compounds suggests that neither idiomatic, syntactic, nor lexical difficulties are insuperable. Attention to the linguistic characteristics of compound noun formation such as the transfer of selected meanings can enhance strategic competence and linguistic creativity. One of the implications of this study is that the comprehension problems faced by L2 learners of English encountering compound neologisms may be very similar to those faced by native speakers. Further research could be devised to identify the extent to which there are similarities in the comprehension of compound neologisms between these two groups and to compare this with the comprehension of other less frequent and non-compounded lexis.

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