Result, Effect, Consequence and *Outcome*:
The collocations and discourse prosodies associated with four synonyms

Phillip R. Morrow

1.0 Introduction

This paper reports on a corpus-based study of four synonyms: *result, effect, consequence*, and *outcome*. The study was undertaken with the aim of describing the differences among these lexical items in terms of their meaning, especially their tendencies regarding discourse prosody. *The New Oxford Thesaurus of English* (2000) lists *result, effect, consequence* and *outcome* as synonyms of one another and in many cases they can be used interchangeably. Yet there are differences in usage; some differences are intuitively obvious, but there are other, more subtle differences which may not be apparent intuitively, but which can be discerned through analysis of the words' occurrence in a large corpus of texts.

2.0 Related studies and aims of the present study

The motivation for the present study arises in part from a study by Stubbs (1995) on the lemma CAUSE. From an analysis of 38,000 occurrences of noun and verb forms of CAUSE, Stubbs was able to conclude that CAUSE is overwhelmingly associated with negative things. This could be seen from the most frequently occurring collocates of CAUSE. They included, for example, *abandonment, accident, alarm, anger, annoyance, antagonism, anxiety, apathy, apprehension, breakage* and many more with negative or unpleasant connotations. (There were a few exceptional cases in which CAUSE was used in the sense of 'aim' or 'principle' as in the expression, *a good cause*.) On the other hand, forms of PROVIDE are generally used in connection with good things. This tendency of some lexical items to be associated with certain speaker attitudes has been termed 'discourse prosody' (Stubbs 2002) or 'semantic prosodies' (Sinclair 1996).

Result is listed as the opposite of *cause* in *The New Oxford Thesaurus of English* (2000: 812), and I was interested to see if negative discourse prosody was associated with *result* and synonyms of *result*. I selected three synonyms which seemed close to *result* in having a general meaning, and which also had relatively high frequencies in COCA, the *Corpus of Contemporary American English*.

This research follows a similarly designed study of near-synonyms by Liu (2010). (Liu uses the term *near-synonym* to highlight the fact that no two words are complete synonyms in the sense of being

exactly the same in their meanings and uses.) Liu used COCA to investigate the semantic structure of five adjective synonyms: *chief, main, major, primary*, and *principal*. By examining the frequency and distribution of these lexical items in COCA, Liu was able to make a fine-grained description of the internal semantic structure of each item, and describe differences in their meanings and usage.

Research on the meaning and use of words through the study of collocates is based heavily on the pioneering study of Firth (1957), who argued that a word's meaning is closely related to the context in which it is used, and especially to the words with which it collocates. Firth's insight was systematized and developed by Halliday (e.g. 1966) who stressed the importance of the lexical level in linguistic analysis. This approach was further developed and incorporated into the approach to corpus linguistics developed by Sinclair (e.g. 1987, 2004).

3.0 Data

The corpus used for this study was the *Corpus of Contemporary American English* (COCA), a 425 million word corpus of American English texts produced between the years of 1990 and 2006. COCA includes both written and spoken texts, but as in other standard corpora (e.g. *The British National Corpus*, *The Bank of English*), the written component is substantially larger than the spoken component. The texts which comprise the corpus are classified into five genres: spoken, fiction, magazine, newspaper, and academic. This classification system makes it possible to compare the frequency and use of an item across genres. COCA was selected as the data source because of its large size, its well-designed and user-friendly structure and its free accessibility (it is freely available online at http://corpus.byu.edu/coca/). One can easily obtain frequency information about a word, its most frequent collocates, and the contexts in which the word is used. Another website (http://www.wordandphrase.info) based on COCA provides several types of information about the 60,000 words in the corpus, including a word's rank, its frequency in the corpus, its distribution in the five genres, its main definitions, its synonyms for each part of speech, and 200 sample concordance lines.

By examining concordance lines that show a keyword in context, we can find which words, and which types of words tend to collocate with it. Analysis of these collocates enables us to identify the grammatical and semantic classes of words that are frequently associated with a selected keyword. The synonyms being studied here are all relatively frequent words, and as Stubbs has observed, "...all the most frequent words have strong phraseological tendencies. That is, they have a strong tendency to collocate with restricted sets of words." (2002: 60) To examine these tendencies we can look at a word's collocates, that is, the words with which a given word most frequently occurs. Software is available which enables one to identify and list collocates which appear to the left and right of a selected word in texts. In the present study I have identified the most frequent collocates among the four words occurring before and the four words occurring after each of the synonyms that

I investigated. Stubbs, citing Jones and Sinclair (1974) notes that, "There is some consensus, but no total agreement, that significant collocates are usually found within a span of 4: 4." (Stubbs 2002: 29)

In identifying collocates it is usual to consider not only the frequency of collocation, but also the Mutual Information (MI) score. MI is a statistical measure of the probability of two words' co-occurring. Usually a score of 3.0 or more is taken as evidence that the two words do co-occur. One useful effect of using MI is to eliminate from the list of collocates most articles, prepositions and other function words which are less relevant to an item's meaning.

4.0 Definitions, frequencies and collocations

4.1 Definitions

The New Oxford Thesaurus of English (2000) lists all four words as synonyms of each other. The entries in the thesaurus begin with an example sentence followed by a general synonym. For *result*, the general synonym is *consequence*. For the other three words, it is *result*. The thesaurus lists 25 synonyms for *result*, but most of them (e.g. *reverberation, ramification*) are relatively infrequent, and often rather restricted in their usage (e.g. *fruit* is used more in literary writing).

In the five dictionaries that I consulted, the first definition given for the noun, *result*, was a very general one: "a thing that is caused or produced by something else; a consequence or outcome" (*Oxford Dictionary of English* 2005: 1503), "[t]he consequence of a particular action, operation, or course; an outcome" (*The American Heritage Dictionary of the English Language* 2000: 1487), "something that happens or exists because of something that happened before; consequence" (*Longman Dictionary of Contemporary English* 2009: 1491), "[a] result is something that happens or exists because of something else that has happened" (*Collins CoBuild English Dictionary* 1995: 1418) and "something that is caused directly by something else that has happened previously = effect" (*Macmillan English Dictionary for Advanced Learners* 2007: 1270). The *Collins* and *Macmillan* dictionaries marked *result* as a high-frequency word, and *Longman* marked it as word with high frequency in both the spoken and written modes. The *Longman* and *Macmillan* dictionaries also noted its usage in specialized genres, e.g. sports/elections, scientific tests, examinations, business and others. All of the dictionaries provided example sentences showing typical usages, especially the pattern, *as a result*.

For the noun, *effect*, all of the dictionaries include in their first definition the idea of something changing because of a previous action or event, e.g. "a change that is caused by an event, action, etc." (*Longman* 2009: 541) And all of the dictionary entries include some or many common phrases with *effect*, for example, *take effect, in effect, have some effect*. Following the entry for *effect* in *The American Heritage Dictionary*, there is a section which gives five synonyms of *effect* and provides descriptions of the differences between them with examples. "These nouns denote an occurrence, situation or condition that is caused by an antecedent. An *effect* is produced by the action of an agent or a cause and

follows it in time… A *consequence* has a less sharply definable relationship to its cause… An *outcome* more strongly implies finality and may suggest the operation of a cause over a relatively long period…" (*The American Heritage Dictionary* 2000: 570)

The *Collins CoBuild, Oxford* and *Macmillan* dictionaries define the noun, *consequence*, in their first definitions, as an effect or result and the *Longman* and *American Heritage* dictionaries also express this core meaning, for example, "Something that logically or naturally follows from an action or condition." (*The American Heritage Dictionary* 2000: 391) The *Oxford* dictionary notes in its first definition the negative nature often associated with *consequence*: "a result or effect, typically one that is unwelcome or unpleasant." (*Oxford Dictionary of English* 2005: 368) The *Macmillan* dictionary provides a list of adjective collocates, and *Longman* also gives common adjective collocates and verb phrases containing *consequence*. These dictionaries, including *Collins CoBuild*, which is based on *The Bank of English* corpus, do not mention the tendency of *consequence* to be associated with negative meanings, but many of the collocations they show have a negative sense, for example, *disastrous consequences, dire consequences*, and *to suffer the consequences*. Not all the collocations are negative though; some are neutral, for example, *social consequences*, and *far-reaching consequences*.

Of the four synonyms, *outcome*, has the briefest entry in the dictionaries. The *Oxford* and *American Heritage* dictionaries give it just two short lines. The *Longman* and *Macmillan* dictionaries offer slightly longer definitions, and the *Longman* dictionary includes a usage note which says, "*Outcome* is slightly formal and is used mostly in writing. In everyday English, people are more likely to talk about *what happened*…" (*Longman* 2009: 1238)

In looking at the definitions of these synonyms, there is some circularity with words being defined in terms of their synonyms, and only minimal information provided about phrases in which they occur frequently and collocates. It is not very clear from the dictionary definitions how these synonyms differ from one another in their meanings, and only partly clear how their usages differ.

4.2 Frequencies

A basic contrast among synonyms is their relative frequency. Table 1 shows the rank and frequency of *result, effect, consequence* and *outcome* in COCA.

Table 1. Rank and frequency in COCA

	result	*effect*	*consequence*	*outcome*
Rank	354	427	1,631	1,756
Frequency	123,215	103,101	25,157	25,511

The figures in Table 1 indicate that all four synonyms occur with relatively high frequency in COCA. *Result* and *effect* are particularly frequent, ranking in the top 500 among 60,000 words, with frequencies of more than 100,000 in the corpus. *Consequence* and *outcome* are much less frequent than *result* and *effect*, but still have high frequencies.

The four synonyms show the same pattern of distribution across the genres of spoken, fiction, magazine, newspaper, and academic. For *result*, *effect* and *consequence*, 49% or 50% of the tokens occur in the academic genre, and for *outcome* 70% occur in that genre. All four synonyms occur least frequently in the genre of fiction. The pattern of frequency, from least frequent to most frequent, across the five genres is: fiction < newspaper < spoken < magazine < academic. This shared pattern of distribution across genres can be taken as evidence for their status as synonyms.

4.3 Collocations with *result*

Result was the most frequent of the four synonyms, and had a very high overall frequency in the corpus. Its 20 most frequent collocates included the following, with numbers of occurrences in parentheses: *as* (26,256), *direct* (642), *increased* (403), *previous* (366), *net* (330), *partly* (286), *largely* (278), *inevitable* (168), *desired* (133), *defeated* (127), *injuries* (126), *reduction* (126), *trauma* (62), *casualties* (59), *merger* (51), *rb* (49), *qb* (48), *predictable* (48), *complications* (48), and *unintended* (47).

The most frequent collocate of *result* was *as*. *As* occurred 26,256 times as a collocate of *result* in COCA. That is about 40 times more frequent than the second most frequent collocate, *direct*, which occurred 642 times. As might be expected, the high frequency of *as* as a collocate of *result* was related to its use in the phrase, *as a result*. This phrase occurred 24,215 times in COCA, accounting for 92% of the collocations of *as* and *result*.

Examination of other collocates revealed noteworthy features related to the meaning and use of *result*. *Direct* was the second most frequent collocate of *result*, and analysis of 100 KWIC (Key Word In Context) lines for *result* with *direct* as a collocate yielded an interesting finding: When *direct* collocated with *result* it was most often in connection with something negative. In other words, *result*, when used with *direct*, tended to have negative discourse prosody. In a sample of 100 KWIC lines in which *direct* collocated with *result*, 63 lines could be said to have a negative sense. Thus, this collocation did not always occur with a negative meaning, but there was a notable tendency for it to do so. The negative prosody is observable in the following KWIC lines:

(1) common shares of stock dropped 99 percent in value, and that was a *direct result* of policies, at least I would argue that came over the last few years

(2) The deterioration of the government's finances is the *direct result* of the misguided priorities of this administration and this rubber-stamping Republican Congress. These deficits

(3) fishing vessels sank, according to a comprehensive Coast Guard report. As a *direct result* 507

people died, accounting for more than half of the 934 commercial fishing

In an examination of *direct* in 200 KWIC lines, there was no observable tendency for it to have negative discourse prosody when not in collocation with *result*. The tendency to have negative discourse prosody can be considered an effect of the collocation with *result*. Among the top 20 collocates of *direct* there was one other collocate that did not itself have a negative connotation, but tended to have negative prosody in collocation with *result*. It was the adjective *predictable*. Collocations of *predictable* and *result* were much less frequent than collocations with *direct*. There were 48 collocations of *predictable* with *result*. In most of them, *predictable* was used as an attributive adjective occupying the position directly before *result*, though there were some instances in which *predictable* was used as a predicative adjective. Of the 48 instances of collocation, 32 exhibited negative prosody.

Among other frequent collocations of *result* there were many in which the collocate itself carried a negative connotation. Among the 20 most frequent collocates of *direct* were several which had negative connotations: *inevitable, defeated, injuries, trauma, casualties, complications* and *unintended*. And, further down the list of collocates, there were more with negative connotations. Among the next 30 most frequent collocates, that is, those from 21 to 50 in terms of frequency, more than half had a negative connotation. These included: *disastrous, adverse, erosion, contamination, accidental, collision, disciplinary, abnormal, paralysis, termination, fractures, layoffs, faulty, deficiency, imbalance, distortions, negligence, mitigation, manipulations* and *fragmentation*. The tendency of these collocations to have negative prosody can be readily confirmed by looking at KWIC lines in which they occur.

Many of the most frequent collocates of *direct* did not have a negative connotation. Some were associated with a particular genre or usage. This was the case with *rb* and *qb*, which were the 16th and 17th most frequent collocates of *direct*. These lexical items occurred in sports-related texts as abbreviations for *running back* (*rb*) and *quarterback* (*qb*), which are terms for positions in American football. The occurrence of two other frequent collocates of *result* was also related to their high frequency of use in certain types of texts. *Previous*, the 4th most frequent collocate of *result*, was used very frequently for reporting scores in sports texts, and collocations of *merger* with *result* were used almost exclusively in business news texts.

Among the four synonyms, *result* had the highest frequency, followed by *effect*. I will now turn to a discussion of some the salient features of *effect*, based on an examination of its occurrence in COCA.

4.4 Collocations with *effect*

Result was 20% more frequent than *effect* in COCA, but both words words were relatively frequent with more than 100,000 occurrences. They also had almost identical patterns of distribution in genres, with 50% of their uses being in the academic genre.

The top 20 collocates of *effect* included (with number of occurrences in paretheses): *significant* (1674),

main (1128), *size* (891), *positive* (869), *cause* (782), *negative* (643), *sizes* (619), *overall* (473), *greenhouse* (435), *profound* (424), *net* (411), *direct* (385), *opposite* (356), *ripple* (341), *gender* (340), *chilling* (323), *dramatic* (320), *cumulative* (307), *interaction* (304), and *adverse* (280). Two of these, *net* and *direct*, are among the 20 most frequent collocates of *result*.

Several characteristics of the usage of *effect* can be seen by examining its frequent collocates. As with other high-frequency words, some collocates have high frequency because of their occurrence in common phrases or as special terms associated with particular subject areas. The three most frequent collocates of *effect* were *significant, main* and *size*. All of these collocates are used in describing results, especially statistical results, of investigations or experimental studies. Out of 100 random KWIC lines for each of these words collocating with *effect*, 89 to 99 of the KWIC lines came from the academic genre, and most all were concerned with describing results of a study or experiment.

The occurrence of *cause*, which was the fourth most frequent collocate, was closely linked to the use of the expression, *cause and effect*. The collocation of *cause* with *effect* in this phrase accounted for 599 out of 782 occurrences of *cause* as a collocate of *effect*.

One of the interesting findings about *result* concerned the negative prosody associated with some collocations, especially with *direct result*. This raised a question as to whether *effect* would exhibit the same negative prosody in collocations with *direct*. I investigated this by checking 100 KWIC lines containing the collocation *direct effect*. There was no clear evidence of negative prosody from this data. Whereas nearly two-thirds of 100 KWIC lines with the collocation *direct result* exhibited negative prosody, the number of lines showing negative prosody for *direct effect* was less than one-third; no more than might be expected in the normal course of events. Furthermore, while 27 of the 50 most frequent collocates of *result* had, themselves, negative connotations, only 7 of the 50 most frequent collocates of *effect* had negative connotations. This points up a clear difference between *result* and *effect* regarding negative prosody.

4.5 Collocations with *consequence and outcome*

Consequence and *outcome* were less frequent than *result* and *effect* in COCA. In fact, *result* occurred about five times as frequently, and *effect* about four times as frequently, as either *consequence* or *outcome*. What accounts for this lower frequency? Although the frequency is much lower, the usage pattern across genres is almost identical for *consequence*, but somewhat different for *outcome*. For *consequence*, 49% of its occurrences are in the academic genre, while for *outcome* the figure is 70%.

The 20 most frequent collocates of *consequence* are (with numbers of occurrences in parentheses): *unintended* (169), *direct* (126), *natural* (91), *inevitable* (86), *logical* (59), *negative* (49), *unfortunate* (33), *actions* (32), *failure* (32), *immediate* (31), *partly* (25), *practical* (24), *largely* (24), *unavoidable* (19), *suffer* (18), *predictable* (16), *consequence* (16), *tragic* (15), *profound* (15), and *aging* (15). Clearly, many of these words have negative connotations which contribute to negative prosody in their collocations with

consequence. The negative prosody associated with *consequence* can be seen from a perusal of KWIC lines. Out of a sample of 100 random KWIC lines 72 included negative meanings. *Consequence* did not have a negative connotation in all of its occurrences, but in most of them it did.

Outcome differed from *result* and *effect* in being less frequent. In terms of frequency, it was quite similar to *consequence*, but it differed from *consequence* in that no tendency for negative prosody was associated with it, and it also differed in its distribution across genres. *Outcome* occurred more frequently in the academic genre (about 70% of its occurrences) than the other three synonyms. Around 50% of their occurrences were in the academic genre. The association of *outcome* with the academic genre is discernible in its frequent collocates. The 20 most frequent collocates of *outcome* include (with numbers of occurrences in parentheses): *measures* (375), *variables* (286), *election* (262), *positive* (248), *final* (206), *likely* (203), *whatever* (198), *variable* (184), *affect* (183), *successful* (150), *determine* (144), *measure* (141), *influence* (141), *treatment* (136), *performance* (121), *desired* (119), *primary* (112), *predict* (111), *regardless* (111), and *trial* (110). None of these words has a negative connotation, and most of them are terms that are used in discussing the results of experimental studies. This observation was confirmed by an examination of KWIC lines with *outcome* as the keyword. That a high percentage of them occur in texts in the academic genre is predictable.

4.6 Collocations with adjectives

Adjectives often express evaluation and therefore could show negative prosody. To check the collocation of the synonyms with negative adjectives, I used another website (http://phrasesinenglish. org) that is designed for identifying the occurrence of phrases in texts. This website is based on the BNC (*British National Corpus*) rather than COCA. The BNC is also a very large (more than 100 million word) corpus of spoken and written texts from a variety of genres. One difference from COCA is that it consists texts collected in Britain, and, presumably, reflects British English usage. At this website, one can search for phrases of two to eight words in length. For the purpose of identifying adjective collocates of these synonyms, I did a search to find which adjectives occurred in the position before each of the synonyms with a frequency of at least 20 occurrences.

This search yielded a list of 60 adjective collocations with *effect*, 16 with *result*, 9 with *outcome*, and 7 with *consequence*. This search did not yield any clear results regarding discourse prosody. Although *consequence* was associated with negative discourse prosody in more than two-thirds of the KWIC lines that I examined from COCA, only one of the seven adjectives in the results from this search had clearly negative connotations.

What was observable from the search for adjective phrases was the difference in collocation pattern. Among the three shorter lists, those of adjectives collocating with *result, outcome* and *consequence*, there was very little overlap among the adjectives occurring on the lists. That is, adjectives which frequently collocated with one of the synonyms did not frequently collocate with the others.

5.0 Conclusion

This study has been concerned with describing the distinctions among a set of synonyms in terms of their frequency, distribution across genres, collocational patterns, and especially discourse prosody. Stubbs (1995) showed that *cause* tended to have negative prosody, and it could be predicted that some words with opposite meaning might exhibit negative prosody, too. Four synonyms, *result, effect, consequence* and *outcome*, were selected for study. These words were selected because of their semantic similarity and because of their relatively high frequency in COCA.

Analysis of the frequency of these terms in COCA and of their distribution patterns across genres revealed interesting similarities and differences. First, two of the synonyms, *result* and *effect,* were found to be much more frequent than the other two, *consequence* and *outcome*. The first two occurred four to five times more frequently in the corpus than the latter two. One possible explanation for this significantly greater frequency is that *result* and *effect* have a more general meaning, are used in more semantic domains, and therefore have higher frequency. Examination of KWIC lines for the synonyms supported this explanation.

Another finding of interest concered discourse prosody. Stubbs (1995) reported that *cause* had negative discourse prosody, and it seemed likely that some of its antonyms might share that characteristic. It was found that one of the synonyms, *consequence*, did have a strong tendency to have negative prosody. Other synonyms also exhibited negative prosody when in collocation with a word that carried a negative connotation. In the cases of those collocations, negative prosody was predictable, but what was found that could not have been predicted was that some seemingly neutral lexical items such as *direct* exhibited negative prosody when in collocation with *result*. This finding has an important implication: It implies that negative prosody is not just a property of individual lexical items, but can also be a property associated with phrases made up of items that do not themselves have negative connotations. This is a finding that merits further study.

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