

## Semantics Project 1

### 1. Introduction

As humans, we tend to categorize things in order to simplify complex concepts and perceive the world around us. A perfect example of this is the relationship between meanings of words such as synonymy and antinomy. We were always taught that words such as 'small' and 'little' have the same meaning or that 'big' and 'small' have opposite meanings, and to a certain extent there is of course truth to these statements. Subconsciously, however, there is a certain point where we draw a line to separate the manners of use of these so-called synonyms. Similarly, with antonyms (that are not simple), it is possible for there to be overlap between similar antonymous pairs.

This project is a perfect example of this complex relationship between words, as it displays that although 'big' and 'large' and 'small' and 'little' are considered to be synonymous, there are situations in which only one or the other can be used. It would seem that the synonymous and antonymous relationships that we were taught as children are just a complete mess of complexity, but there is still hope, for patterns do exist, although they may not be as clear-cut as we would like them to be.

It took a while to really pinpoint the best fit words for the example sentences, especially since there may be other options outside of what I chose. Eventually, I came up with the following choices:

- a. I'd like a large/small amount of cash.
- b. Here comes a big/little dog.
- c. The dog let out a big/little yelp.
- d. They made a big/small mistake.
- e. What a cute little doggie!
- f. The twins are big/little for their age.

Once again, I do not deny that there may be other fits amongst the words for these sentences, but to keep things a little bit more simple and organized, I limited my choices to a maximum of two words per sentence.

### 2. Hypotheses

After choosing the best fit words for the sentences came perhaps the most difficult part of the project, coming up with hypotheses as to which factors most greatly determine my choices for each word.

## **2.1. Big**

First, I'll start off with 'big,' as this was the word that I had the most difficulty with since it seemed to fit in a number of different sentences. I came up with the following hypotheses regarding 'big.'

1. It often describes the degree of importance, significance, impact etc. of inanimate concepts as exemplified in d "big mistake."
2. It is often used to describe living things such as people or animals. When used to describe living things, it describes more general, abstract size as opposed to 'large,' which describes more of spatial, literal size.

My reasoning for hypothesis 1 was that I felt that 'big mistake' was a good example of how 'big' is used to describe a more abstract, metaphorical sense of size. It was also the example in which replacing 'big' with 'large' felt the most unnatural.

Similarly, 'big' has a more abstract sense in example f. Whereas saying that someone's twins are 'large' for their age may imply that they are fat, when someone tells another person that their twins are big for their age, it gives off a little bit more of a general sense of size as opposed to one specific dimension.

## **2.2. Large**

Although I mentioned that 'large' is used to describe spatial size, it can also be used in a less tangible sense, but in a very specific way.

1. It is most often used to describe the 'mass' in a portion-mass relationship, especially having to do with amounts of things such as "large amount of money," "large group of people," etc.
2. It is also often used to describe spatial sizes, such as a room, a house, or a refrigerator.

I hypothesize that 'large' is most often used to describe the amount or volume of things, as seen in hypothesis 1. In addition, I predict that we will find it in the syntactic structure 'large X of Y,' where X is a 'mass' in a portion-mass relationship.

## **2.3. Small**

I predict that 'small' is used as the antonym of 'large' in the sense that we have just looked at, as stated below:

1. Similarly to 'large,' small is used in phrases describing amounts of things. For example "small amount of X," "Small group of people," etc.

## **2.4. Little**

I hypothesized the following factor regarding 'little.'

1. I predict that we will see 'little' often used to describe children and animals.

'Little' itself is perhaps used as a way to turn a noun into a diminutive; in fact, it seems to further describe words that are already a diminutive, such as 'doggie.' Additionally, although I may not be able to form this into a hypothesis, one difference I have noticed between 'small' and 'little' is that 'little' seems to be more closely tied together with the noun it describes, and shows compound-like characteristics. This may be more easily explained once we have our data, so I will return to this topic in section 4.

### 3. Corpus Data Search Methods

When conducting searches on the Time Magazine corpus, I wanted to keep things as consistent as possible, while still optimizing the usefulness of the data in accordance with my hypotheses. Therefore, I aimed to find each adjective used only in its modifier function and excluded predicate functions. Additionally, after doing several test searches I noticed that proper nouns were included in the search results. Since I felt that these were not useful for the purpose of my study, I searched for only common nouns using [nn\*].

In addition to these search terms, I added additional specificity for both 'big' and 'little.' For 'big,' I wanted to eliminate collocates such as 'big government,' 'big money,' and 'big tobacco' because I felt that these phrases did not match the typical adjective-noun combination, and were rather more like compounds used only in a specific genre of language (i.e. news) Therefore, I limited the search to 'big' used only with plural nouns (big [\*nn2\*]).

In the case of 'little' I noticed that 'little' can be used to express the same meaning as 'small amount.' For example "Radek then went on to say that there really is **little difference** between the Communist and Nationalist program." In order to eliminate this, I made the same limitation as with 'big' by searching for 'little' only paired with plural nouns.

Overall, my reason for limiting my searches in this way was to place all adjectives on the same playing field and focus more on different types of word pairs rather than different syntactic structure (although in a larger study, this would certainly be important)

After collecting 100 examples for each adjective, I transferred the sentences over to Microsoft Excel and extracted the adjective-noun pairs so that they could be more easily viewed. While examining the lists of pairs, I separated the nouns into categories, referring back to the original sentences to clarify context, if needed.

### 4. Results

Overall, I found a lot of occurrences within the example sentence data that matched my hypotheses, but also observed a variety of additional noun categories not hypothesized at the beginning of the project.

#### 4.1. Big

Figure 1 displays the breakdown of the frequency of occurrence for each category of noun that occurred with 'big.'

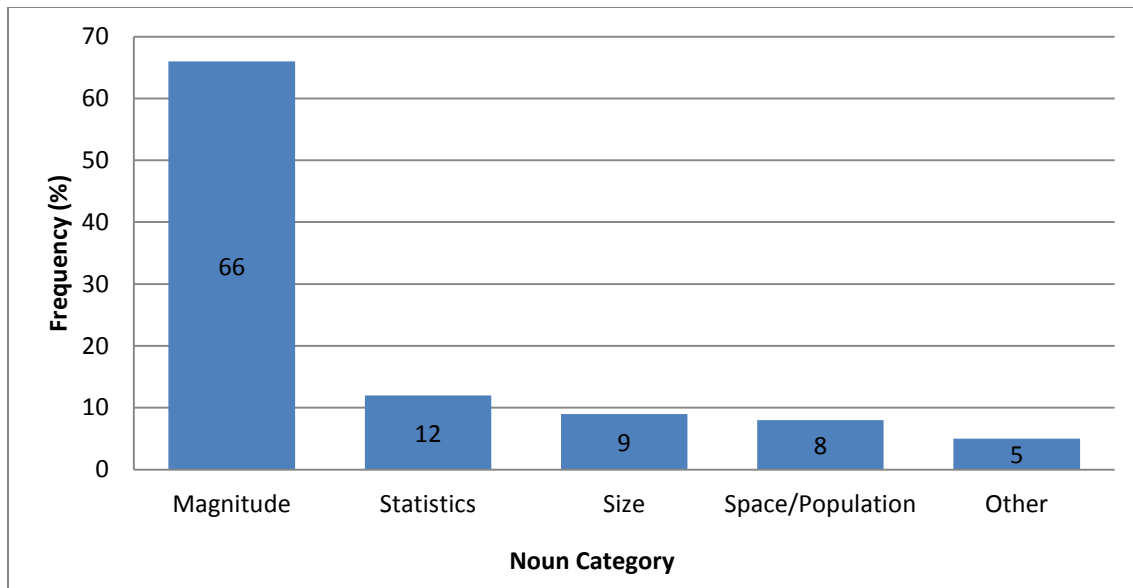


Figure1. A breakdown of the noun categories that occurred with 'big'

As I hypothesized, in my sample data, 'big' often described nouns in terms of degree of importance, significance, impact, which I named as "magnitude." Examples of this include "big issues," "big problems," "big names," "big airlines," etc. All of the pairs in this category displayed the share characteristic of importance, prominence, or as the category states, magnitude. We can see from the data that 66% of the 100 examples exhibited this characteristic, far greater than any other category for 'big'

My 2<sup>nd</sup> hypothesis, that it would often occur with living things, did not prove to be true. It rarely described the size of people or animals, as we can see from the low frequency of the category 'size,' which is where I put cases that 'big' described the size of something tangible (e.g. animals). Some examples of this category are 'big eyes,' 'big cats,' and 'big bucks' (believe it or not this was actually referring to the animal and not money).

The other two significant categories found in the data set do not describe the size of tangible objects. The first, "Statistics," includes phrases such as "big deficits," "big ratings" and "big numbers." The second, "Space/Population," includes phrases such as "big cities" and "big groups."

From the corpus data, it seems as though 'big' rarely occurs before tangible objects. If we combine the categories "Magnitude," "Statistics," and "Space/Population," which all describe size in a more abstract sense, similar to 'mistake' or 'yelp' rather than to 'dogs' or 'twins,' it makes of 86% of the 100 examples from the corpus data. Therefore, I would broaden my hypothesis regarding 'big' to state that 'big' more often describes the abstract size of nouns than the tangible size of nouns.

## 4.2 Large

Figure 2 displays the breakdown of the frequency of occurrence for each category of noun that occurred with 'large.'

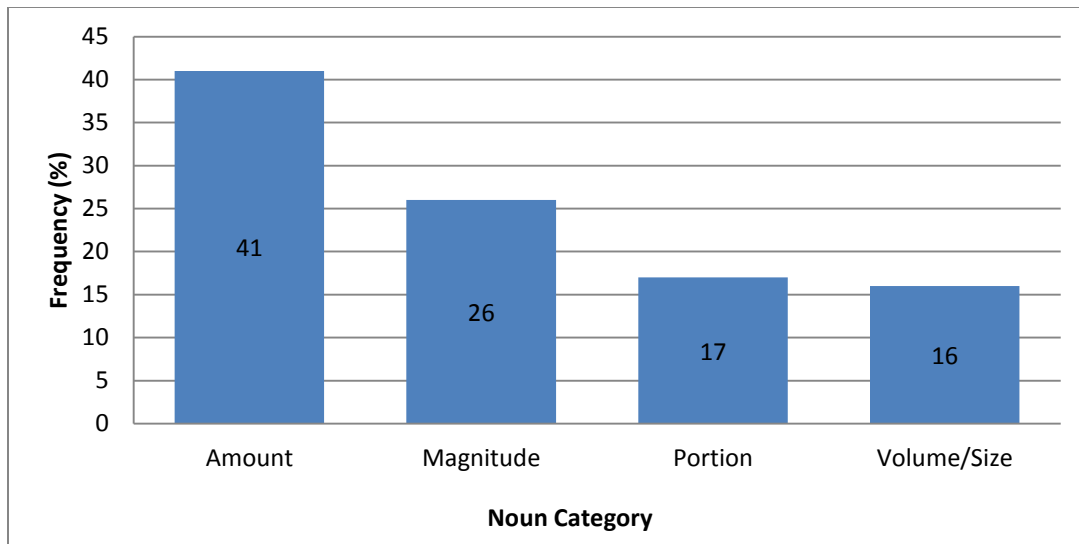


Figure 2. A breakdown of the noun categories that occurred with 'large'

My hypotheses for 'large' proved to be true in various ways. The most commonly occurring category was "Amount," which includes pairs such as "large amount(s)," "large number(s)" (occurred 19 times on its own!), "large stock(s)," etc. It is worth mentioning that the majority of these pairs were additionally followed by "of X" (e.g. "Large amount of money"). Similar, yet separate to this category is 'Portion,' which included phrases such as "large chunk of X" and "large percentage of X."

My hypothesis regarding spatial sizes seems to also be true to some extent. As we can see from Figure 2, there were 16 occurrences of what I categorized as "Volume/Size," which includes phrases such as "large area," "large container," "large room," and "large house." These words in particular seem to fit well with my "spatial sizes" hypothesis.

#### 4.21 Synonymous Relationship between 'Big' and 'Large'

We can see from Figures 1 and 2 that the distributions of nouns used after each adjective are quite different. We do not see 'big' used in phrases such as \*'big amount of X,' although of course this would be understood by the listener if uttered. Interestingly, we may find cases in which we can use both 'big' and 'large' with a given noun, but there is a different connotation. For example, 'big airports' and 'large airports' both occurred in the corpus data. However, based on the context of the sentence in addition to the meanings of each adjective, 'big airports' meant 'airports that are well-known,' while 'large airports' described the literal size of the airports. This is representative of the difference between the more common uses of 'big' and 'large.'

This is not to say that the usage of 'big' and 'large' are in a complementary distribution. There are also many cases when both of the adjectives are used with the same or similar nouns, and also express essentially the same meaning. Referring back to Figure 2, we can see that category most commonly paired with 'big,' "Magnitude," also occurs with 'large.' The pairs within this category include phrases such as 'large companies,' 'large firms,' and 'large issues,' some of which are identical to the adjective-noun pairs seen with 'big.' Furthermore, from my

understanding of the sentences, they express the same or similar meaning as ‘big.’ Therefore, we can assert that although ‘big’ and ‘large’ have different uses in some cases, the synonyms also have an overlapping realm in which they can be used to describe similar nouns and express similar meaning.

### 4.3 Small

Figure 3 displays the breakdown of the frequency of occurrence for each category of noun that occurred with ‘large.’

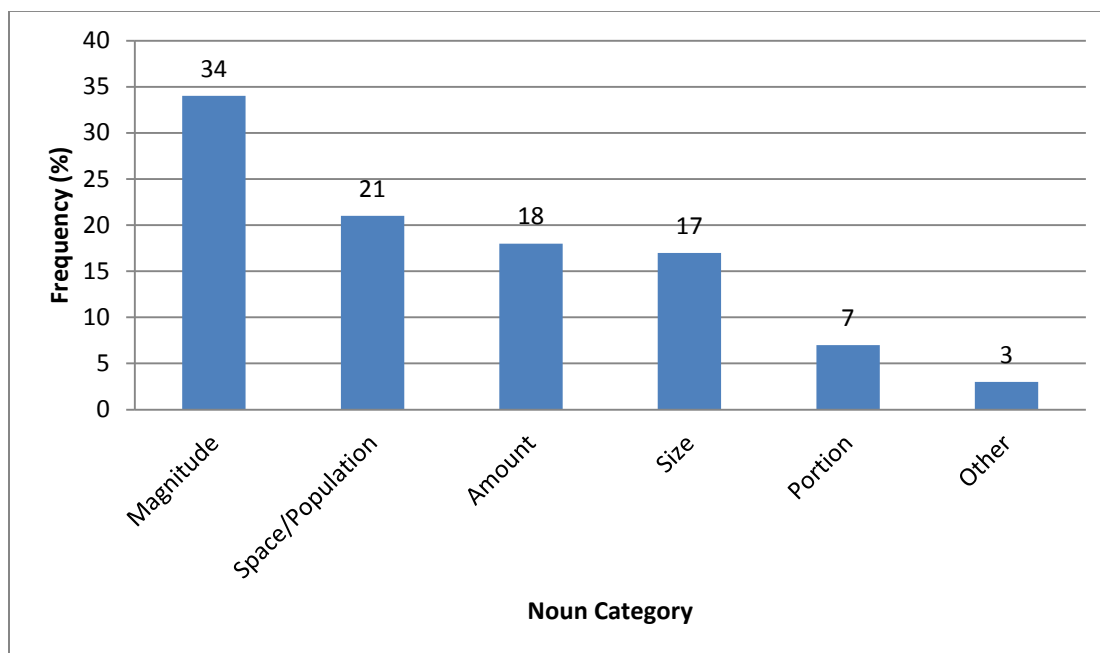


Figure 3. A breakdown of the noun categories that occurred with ‘small’

It is apparent from Figure 3 that small occurs with a wide variety of nouns, most of which we have seen already with ‘big’ and ‘large.’ I did not hypothesize much about ‘small,’ but my hypothesis that it would occur in similar phrases to ‘large’ such as ‘small amount of X’ seems to be true (Ref. “Amount”). Due to the variety of possible categories, it is difficult to pinpoint the factors that determine when ‘small’ will occur, but perhaps it will help by looking at the antonymous relationship between ‘small’ and ‘big’ and ‘small and large’

#### 4.3.1. Antonymous Relationship between ‘Small’ and ‘Big’

Looking back, I should have taken into consideration in my hypothesis that ‘small’ is an antonym of ‘big’ in the case of d “They made a **big/small** mistake,” because we can see that ‘small’ occurs most often in the same category that ‘big’ occurs most often: “Magnitude.” Phrases in this category include “small business,” “small company,” “small problem,” and “small things,” nouns similar to that which occurred with ‘big’ (and ‘large’). Additionally, we can see that ‘small’ also overlaps with ‘big’ in the category “Space/Population,” which includes phrases such as “small town,” “small village,” and “small island.” It is also worth mentioning that while

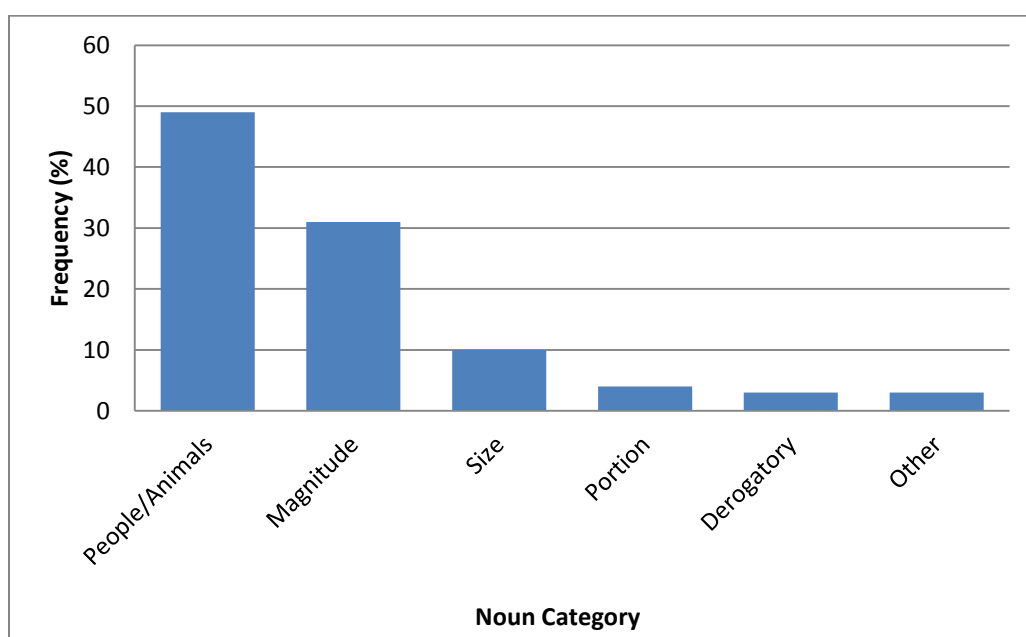
'big' describes the size of "cities," 'small' describe "towns" and "villages," which are inherently smaller than cities.

#### 4.32. Antonymous Relationship between 'Small' and 'Large'

While 'small' and 'big' overlap in only two categories, 'small' overlaps in 3 out of the 4 categories seem with 'large': "Magnitude", "Amount," and "Portion." This suggests that perhaps 'small' is closer of an antonym to 'large' than to 'big.'

#### 4.4. Little

Finally, we arrive at the last word, 'little.' Figure 4 displays the breakdown of the frequency of occurrence for each category of noun that occurred with 'little.'



For the first time out of all four words, we see the category "People/Animals," which occurred nearly 50% of the time in the corpus data of 'little.' Furthermore, consistent with my hypothesis, 'little' occurred most often with children. Examples includes "little boys," "little girls," "little kids," and "little squirts." This supports my theory that 'little' would occur with nouns that are already inherently small (ironically, it feels awkward to use 'little' here).

#### 4.21 Synonymous Relationship between 'Little' and 'Small'

Although we see an overlap between 'little' and 'small' with the categories "Magnitude," "Size" and "Portion," within each category is a different set of words. For example, while with 'small,' we see adjective-noun pairs such as "small company," and "small problem," in the case of 'little' we see pairs such as "little shops" and 'little moments.' While the latter is more difficult to pinpoint the difference, the first example, 'little shops,' supports my theory that 'little' tends to describe nouns that already have a connotation of being small (i.e. shop as opposed to company).

However, the two words did show some overlap within the ‘Magnitude’ category such as ‘little things’ and ‘small things,’ which seem to have a similar connotation.

Let us return to the point mentioned in 2.4, which is that ‘little’ seems to be more closely tied together with the noun it describes, and shows compound-like characteristics. Although still difficult to put into words even after looking at the set of data, let us look at example to help explain. “Little boy” or “little girl” are often used by adults addressing children, especially when the adult is not acquainted with child. However, we do not hear adults calling children “small boy” or “small girl,” but we can utter the sentences “He is a small boy,” or the phrase “the small girl” and still make sense. The difference here seems to be that an article is necessary in the case of ‘small.’ For this reason, ‘little’ seems more closely tied together with the noun it describes.

It would seem that there is less overlap between ‘small’ and ‘little’ than with ‘big’ and ‘large.’ However in both cases, we can still argue that although the categories and word pairs are different, they describe in one sense or another, the broad concept of size.

## **5. Conclusion and Further Research**

In this paper, we have looked at the four adjectives in their modifier function paired with nouns. Overall it seems as though each pair of synonyms displays difference uses with different classes of nouns. At the same time, each pair of synonyms also shows overlap in their uses. One of the main differences we have seen is the description of tangible nouns vs abstract nouns. In this particular data set, with the exception of ‘little,’ abstract nouns occurred more often than tangible nouns. However, this could be due to the genre of writing from our corpus. If we had a corpus of conversational utterances of these adjectives, it may be the case that tangible nouns would occur more often.

Furthermore, regarding antonymous relations, although some antonymous pairs seem to be fit better together, we can assert that there is no perfectly antonymous pair of adjectives within the set of four. We may also assert that this is the case with other adjectives not in a simple antonymous relationship.

In further research, the lexical relations of these adjectives should be studied not only limited to each adjective’s modifier function. In doing so, I would predict that it would open up a whole new set of categories for each word, although things may become more complicated.