Negation of Metaphor: A Psycholinguistic Study

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Declaration

I hereby declare that this dissertation is entirely my own work and that it has not been submitted as an exercise for a degree at any other university.

_____________________________ April 30, 2005
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Abstract

This paper describes a psycholinguistic study undertaken to show that although negative metaphors are indeed still metaphors, and are recognised as such, they are more difficult to comprehend than their positive counterparts. Established metaphor takes longer to process when negated, and novel metaphor created negatively is simply difficult to understand. The web-based system used to run the experiments, which were conducted to prove/disprove this hypothesis, was developed by previous CSLL graduates. This paper looks at the conflicting views on metaphor that exist, as well as the methodology of the experiments and the results achieved.
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“The reason judgements seem to work well for linguists is that they can be manipulated and distorted to suit the purpose of an analysis”

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Chapter 1

Introduction
1.1 Introduction

This is an introductory chapter to my final year project, which is concerned with the difficulty we seem to have in comprehending negative metaphor. I used an online experimental system to conduct studies in which the participants are presented with both positive and negative metaphors. I hope to be able to conclude that negative metaphor is more difficult to comprehend than positive metaphor and to discuss the possible reasons behind this phenomenon. This chapter will outline my aims and motivations surrounding this project, and it also explains some of the terms that are used regularly throughout the paper, and finally, it will give an overview of the structure of the entire project.

1.2 Aims and Motivations of the Project

The subject of negative metaphor has long been overlooked. According to Davidson (Davidson, 1991, pg. 258), “The negation of a metaphor always seems to be a potential metaphor”. It is clear from his uses of the words ‘seems’ and ‘potential’ that he does not have a resolved opinion on the matter. The complete avoidance of the subject by most other authors in this realm is also noteworthy. As far as I am aware, there has never been any research conducted concerning negative metaphor and the negation of metaphor. I am enthusiastic about having the opportunity to be the first to explore such a niche domain.

I hope to be able to conclude that negative metaphor is irrefutably more difficult to comprehend than positive metaphor, especially in the case of novel metaphor. I also hope to be in a position to comment on various reasons as to why this is the case.

I studied psycholinguistics in Germany at the Universität des Saarlandes on my year abroad. I thoroughly enjoyed this class and found it very interesting. I learned how to carry out experiments avoiding obtaining skewed data as much as possible. I wanted to put such theory into practice and to utilise the knowledge I gained by incorporating it in my final year project.

1.3 Explanation of Terminology

Due to the fact that not everybody is innately familiar with all of the vocabulary I will be using, it is necessary to define some of the key terms. Section 1.3.1 describes the two different categories of metaphor, established and novel, and section 1.3.2 defines what exactly I mean by the expression
‘negative metaphor’. Section 1.3.3 describes psycholinguistics as a discipline, and the final subdivision in this section deals with what is meant by the often inconsistent term, ‘grammaticality’, within the realms of this paper.

1.3.1 Metaphor

Interestingly, the word metaphor was originally a Greek word meaning ‘transfer’. The Greek etymology is from meta, implying ‘a change’ and pherein meaning ‘to bear, or to carry’. Thus, the word metaphor itself has a metaphorical meaning in English – the transfer of meaning from one thing to another. “A figure of speech in which a word or phrase is applied to an object or action that it does not literally denote in order to imply a resemblance.” This is the current definition given for Metaphor in Collin’s English Dictionary (Collins, 2000). Although this definition at first glance may seem adequate, this is not the view taken by many the linguist with an interest in the topic. Some of the various theories of what metaphor is and the processes behind its creation and comprehension are described in the following chapter.

Metaphor is one of the big problems lying in wait for artificial intelligence and formal semantic theories, because metaphor can be intuitively illogical. It generally violates the first principle of logic - the law of non-contradiction, that says a proposition cannot be both true and false since many metaphors are ‘literally’ false but communicatively true.

I will now define the mechanisms governing the comprehension of some utterance types which are believed to be similar to the mechanisms behind metaphor appreciation. These include irony, indirect speech acts, exaggeration and idiom. The mechanism by which irony works is that the utterance, if taken literally, is obviously inappropriate to the situation. The hearer is therefore compelled to reinterpret the meaning as the opposite of its literal form. In English, irony is generally accompanied by a distinctive intonation pattern so that it is quickly recognisable and distinguishable from other utterance types. In indirect speech acts, the speaker means what they say, but also something more in addition. For example, Can you open the window?, to understand that the speaker is requesting the hearer to open the window, the hearer must possess some device for recognising that the utterance might be an indirect speech act. Such a requirement is satisfied by the fact that in the context, interrogation about the hearer’s ability to open a window lacks any conversational purpose. The hearer then has to seek an alternative meaning. Metaphor often relies on exaggeration. “Many metaphors are exaggerations” (Searle, 1993, pg. 45). Take the example, She brought home 11 books, this could be spoken metaphorically as She brought home a library. The process by which exaggeration is identified is identical in this case to
how a metaphor is recognised. An idiom is a long dead metaphor which has become a fixed expression of the language (a somewhat informal definition). Idioms are understood as basic vocabulary is understood – the meaning is simply retrieved from memory.

There are two categories into which all metaphor falls, they are established metaphor and novel metaphor, or dead and living, metaphorically.

**Established Metaphor**

Established metaphor, or dead metaphor, is metaphor that has been established in the language. It has become part of the language and is categorised with (and often interchangeable with) expressions such as idioms.

**Novel Metaphor**

Novel metaphor, or living metaphor, is metaphor that is new and uncommon. It has been claimed that once a metaphor has been heard it can not longer be termed ‘novel’. Therefore the content of each person’s personal category of novel metaphor is different. Novel metaphor is generally seen as a valuable stylistic device for writers.

**1.3.2 Negative Metaphor**

The negative metaphor with which I am concerned is both established metaphor that has artificially been made negative\(^1\) (*Her mind wasn’t wandering*), which includes established negative metaphor that has been made negative (*Men are islands*), and novel metaphor, created in a negative context.

Vogel (Vogel, 2001, pg. 61) focuses on the truth conditions of metaphor, and states the fundamental truth conditions concerning it: “Metaphors are simply literally false (or when negated, patently true). . . a metaphorical assertion can be true or false in its own non-literal terms.” He deals briefly with the issue of negative metaphor: “I personally have a hunch that negation is static. That is to say that I believe that the sense of an expression cannot be extended within the scope of negation. This is a very different claim from the possibility of a metaphor being used within the scope of negation.” Vogel is basically saying that he thinks that negating established metaphor is a possibility, but that novel metaphor cannot be created as negative. This theory will be strengthened or weakened according to the results of my experiment.

Negation in general makes utterances more complex. Take, for example, *I went to the shop* vs. *I didn’t not go to the shop*. Discourse theory of

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\(^1\)Negation, as it is here intended, changes the truth value of a statement to its opposite.
negation is also slightly problematic. Take, for example, *Mary has a bike. It is red* vs. *Mary does not have a bike. It is red.* Contextually, this is a nonsensical utterance, but the explanation as to why this is remains complex, as does the explanation as to why a sentence such as *The dolphin does tricks* requires a second verb when it is negated *The dolphin doesn’t do tricks.* Negation is more sophisticated than it first appears, which is why I feel that the integration of negation with an already advanced speech act such as metaphor, is not a simple task. Both negation and metaphor are not immediately acquired by children learning a first language. Adequate control of the syntax surrounding negation is acquired when the child is about 4 years old, and with metaphor it takes much longer, it is not until children are on average 11 years old that they can produce and comprehend metaphor. Such facts suggest that negative metaphor is therefore obviously more complex than its positive counterpart.

1.3.3 Psycholinguistics

The discipline itself is a merge of both psychology and linguistics. The reason why this project is described as a ‘psycholinguistic study’ is because the survey conducted is based on psycholinguistic research and ideas. The fact that the subjects do not recognise what it is they are being tested on, the fact that there are no leading questions, the fact that the participants’ instructions are given as they are, and many more, are all the result of studying the discipline of psycholinguistics, and deciding on how best a study should be conducted. Psycholinguistics is concerned with providing an explanation of how the human language processing system works, drawing on computational, theoretical, and experimental research methods, which should make apparent the reason why I felt that an experiment concerning negative metaphor should necessarily be psycholinguistic in nature.

1.3.4 Grammaticality

The recognition, that judgement of what one person says is dependant on what another person thinks, is noted by Householder (Householder, 1973) and quoted by Schütze (Schuetze, 1996, pg. 26), “The paradox of linguistics: the only possible way of determining whether or not a grammar is correct is by consulting the speaker’s intuitions.” And even now, more than thirty years later, the paradox remains because no better means of judgement has been discovered. As Chomsky said, a speaker has an “intuitive sense of

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2Each of these features are further discussed in Chapter 3 (Methodology).
grammaticalness” (Chomsky, 1975). Who can say what is grammatical? If grammaticality is based on ‘correctness’, then it is difficult to find a grammar that is agreed on by what are known as prescriptive grammarians. They try to derive an approach to grammar that prescribes how people should use language. Most linguists, on the other hand, would associate themselves not with a prescriptive but with a descriptive approach to grammar. These descriptive grammarians consider all forms of language usage validated by the very fact that they occur (Little, 2001). An utterance is considered ‘correct’ as long as it is used somewhere by somebody, and not merely an accidental speech error. This sense of grammaticalness varies therefore not only from dialect to dialect but also from speaker to speaker. This is the version that I agree with and that I shall refer to throughout this paper, it has to do with ‘acceptability’. Speakers can judge acceptability quite easily; this feeling of acceptability is, in my opinion, a perfectly satisfactory means of assessing grammaticalness. Of course, as Raven Mc David said, quoted in Paikeday (Paikeday, 1985, pg. 123), “being a native speaker doesn’t confer papal infallibility on one’s intuitive judgements”, but when there is a clear tendency for the majority of a group of people to deem something grammatical or ungrammatical (or acceptable or unacceptable), I do believe it to be the case.

1.4 Structure of the Paper

This section consists of a brief outline of the contents of each of the following chapters.

Chapter 2 – Methodology: The next chapter looks at the different methods of experimentation and why I chose how to conduct my study. It describes the instructions given to participants, and the reasons behind the example metaphors I chose to use, as well as the reasoning behind the questions I asked following the passages.

Chapter 3 – Experimentation: This chapter describes the experimentation tool used, including screenshots. It shows who took part in the study, and how I found these respondents.

Chapter 4 – Results: This chapter looks at the results obtained, and graphs and tables are provided so that the information is easier to see and understand.
Chapter 5 – Discussion: The results are discussed in this chapter. Hand(edness preference and Previous Linguistic Training with regard to the answers given in this study are also examined in the hope of finding links.

Chapter 6 – Conclusion: This chapter provides a conclusion to this paper. It briefly summarises the entire project, noting especially the achievements, and describes how and where my paper has emphasised the need for further study in certain areas.
Chapter 2

Background Reading
2.1 Introduction

This chapter contains summaries and both contrasts and links between some of the papers that I have found to be interesting and relevant to the topic throughout my grapple with the world of metaphor. Here I summarise each of the main approaches to understanding how metaphorical ideas are expressed and understood. These include comparison theories, the semantic interaction theory, Searle’s principles of metaphorical interpretation, and the mapping theory.

2.2 Comparison Theory

Comparison theories go back to the ancient Greek days of Aristotle, and are assumed to be the oldest theories hypothesized relating to metaphor. They assert that metaphorical utterances involve a comparison between two or more objects, basically claiming that all metaphor is really literal simile with the ‘like’ or ‘as’ deleted and the respect of the similarity left unspecified. This theory has many fundamental flaws, as acknowledged by many linguists.

According to this view, the metaphorical expression Sally is a block of ice means Sally is like a block of ice in certain respects (Searle, 1993). The metaphor can be paraphrased as Sally is an unemotional person. Being unemotional is not a trait of a block of ice, but being cold is. Therefore, according to this elliptical simile hypothesis, it is possible to deduce that Sally is very cold, but the literal reading of this sentence would have to be taken, and so it is concluded that Sally finds the temperature cold. The real metaphorical meaning which was intended was not reached at all. Even if the process is repeated and Sally is cold is analysed, the underlying situation that results can be described as follows: Sally is similar to the cold in certain respects. This is by no means an isolated example; it is very common that the translations of the metaphor are still metaphors, especially in the frequent uses of temperature metaphors for emotional and personal traits (Red hot passion, lukewarm friendship, cool customer). It remains extremely difficult (or even impossible) to return the intended meaning as there appear to be no satisfying unmetaphorical similarities in this case between objects that are cold and people who are unemotional. It is due to this fundamental flaw with this theory of metaphor that I personally have chosen not to adhere solely to it for the purposes of my study.
2.3 Interaction Theory

A chief defender for the semantic interaction theory is Max Black (Black, 1993, pg. 42), who has written that “metaphor involves an interaction between two semantic contents, that of the expression used metaphorically, and that of the surrounding literal context”. The semantic interaction theories were developed in response to the weakness of the comparison theories. It is explained that every metaphorical expression contains a “frame” and a “focus” (Black, 1993).

Behind the notion that an interaction between an expression used metaphorically and other expressions used literally results in metaphorical meaning, is the assumption that all metaphorical uses of expressions must occur in sentences containing literal uses of expressions. This is, according to Searle, plainly false. It is not the case that every metaphorical use of an expression is surrounded by non-metaphorical expressions, although admittedly, most are. The example Searle (Searle, 1993) proffers is the familiar Sally is a block of ice, but he now cleverly changes it slightly to make it fully metaphorical as in The bad news congealed into a block of ice, which he describes as a “mixed metaphor”.

A second problem found with this semantic interaction theory is perhaps more significant. In general, it is not the case that the speaker’s meaning is resultant from interaction among the constituents of the utterance. Taking an example used in the experiment (See Appendies C and D), My mother is a prison guard, the subject does not specifically interact with the predicate ‘a prison guard’. ‘My mother’ could easily be replaced by ‘Sheila Sheehan’ or ‘the science teacher’. With either of these possible replacements, the exact same metaphor can still be created.

Due to the evident defects with this suggestion as a mechanism for understanding how it is that metaphor works, I have decided not to base my understanding of metaphor theory on this particular hypothesis.

2.4 Davidson’s Disagreements

Donald Davidson (Davidson, 1991) disagrees with all previous theories of metaphor. He has his own rigorous views on what metaphor is and more apparent, what metaphor isn’t. He disagrees that metaphor has another meaning in addition to its literal sense, i.e. he disagrees that speaker meaning and utterance meaning differ. He argues that metaphor cannot be paraphrased and quotes Stanley Cavell in saying that most attempts at paraphrase end with ‘and so on’ (for example, a man is like a wolf by virtue of having hair,
of being warm-blooded, of breathing air, and so on). Furthermore, he is only interested in novel metaphor, as he says (Davidson, 1991, pg. 249) that “to make a metaphor is to murder it.”

He is, as are most linguists concerning themselves with this area, very interested in how a metaphorical utterance is processed (Davidson, 1991, pg. 247) “Once we understand a metaphor we can call what we grasp the ‘metaphorical truth’ and (up to a point) say what the ‘metaphorical meaning’ is. But simply to lodge this meaning in the metaphor is like explaining why a pill puts you to sleep by saying that it has a dormative power.” He also claims that we recognise metaphor immediately and that “when we do hesitate, it is usually to decide which of a number of metaphorical interpretations we shall accept; we are seldom in doubt that what we have is a metaphor.” This is something that can be examined to some degree in my experiment. According to Davidson, if indeed he should agree that negative metaphor remains metaphor, then there should be no hesitation in the understanding of the metaphor, as long as the context is clear, and ambiguity is not an issue. Davidson, unfortunately, does not come to any solid conclusions in the quest to dissect “the wonder of metaphor”, but his discontent with the existing theories are well expressed.

2.5 Searle’s Principles of Metaphorical Interpretation

John R. Searle has dismissed the suggested theories of many linguists. He offered up his own version of ‘How Metaphors Work’ in 1993 (Searle, 1993). He words the question of metaphor as follows (Searle, 1993, pg. 104):

How is it possible for the speaker to say metaphorically $S$ is $P$ and mean $S$ is $R$, when $P$ plainly does not mean $R$; furthermore,
How is it possible for the hearer who hears the utterance $S$ is $P$ to know that the speaker means $S$ is $R$?

Searle approaches the problem from the hearer’s point of view. There are three steps that the hearer must go through in order to comprehend the intended metaphorical meaning of an utterance.

Firstly, the hearer must have some strategy to determine whether or not they need to find a metaphorical interpretation for the utterance at all. Basically, if an utterance is defective when taken at face value, then they look for an utterance meaning that is different from the sentence meaning. The defects which cue the hearer include obvious falsehood, tautology, semantic
nonsense, violations of either the rules of speech acts or of the conversational principles of communication.

Secondly, once it has been deemed necessary to look for a metaphorical interpretation, there must be some set of principles for the computation of the possible metaphorical meanings of the utterance. Searle has defined 8 principles in total but he is confident that others exist.

- Principle 1: Things which are P are by definition R. *Ruby is a giant* means *Ruby is big*.
- Principle 2: Things which are P are contingently R. *Maurice is a pig* means *Maurice is dirty* even though it is not always the case that pigs are dirty.
- Principle 3: Things which are P are often said to be R. *Richard is a gorilla* means *Richard is prone to violence* even though gorillas are known not to be violent.
- Principle 4: Things which are P are not R, not like R, and not believed to be R. However we perceive a connection, and in our minds P is associated with the properties of R. *Sally is a block of ice*.
- Principle 5: The condition of being P is like the condition of being R. *You have become an aristocrat* could be said to somebody who has received a promotion.
- Principle 6: P and R are similar in meaning, but P applies only in restricted circumstances. *His brain was addled* can be said even though addled only applies to eggs.
- Principle 7: Instead of going from *S is P* to *S is R*, the hearer’s objective is to go from *S P-relation S1* to *S R-relation S1*. For example: *The ship ploughs the sea*.
- Principle 8: Metonymy\(^2\) and Synecdoche\(^3\) — *The Crown* refers to the British monarch.

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\(^1\)Principles and majority of examples taken from Searle’s paper (Searle, 1993).

\(^2\)The substitution of a word referring to an attribute for the thing that is meant (Collins, 2000).

\(^3\)A figure of speech in which a part is substituted for a whole or a whole for a part (Collins, 2000).
Thirdly, there must be strategies for limiting the range of metaphorical meanings to just those that apply to the subject, i.e. the speaker and hearer must be able to restrict the range of possible values to the actual value of R, given their knowledge of the subject. Only the possible values of R which determine possible properties of the subject can be actual values of R.

The problem that I have with Searle’s ideas is that he avoids dealing with the very issue that he dismissed others’ theories for. Principle 4 above states that “we perceive a connection and in our minds P is associated with the properties of R”. This is no analysis, a “perceived connection” could easily be the explanation adopted for all variants of metaphor if such a flimsy clarification is allowed here. Otherwise I find his work meticulous and he seems to cover every other type of metaphor that I can recollect.

2.6 Conceptual Mapping Theory

Lakoff’s contemporary views on metaphor are so called because they are relatively new ideas, differing from older traditional theories. Lakoff’s suggestion is meant as a generalisation for all metaphor. It consists of a single formula that follows a pattern, which is hierarchically structured. He explains his theory by means of an example. Consider, for example, this metaphor describing the demise of a relationship: \textit{We have to go our separate ways}. Here love is being conceptualised as a journey, with the implication that the relationship must end, that the lovers cannot continue the journey that they have been on together, they must go in different directions, separately. This is not an isolated instance. English has many ordinary expressions that are based on the conceptualisation of love as a journey, some are necessarily about love; others can be understood that way: \textit{Look how far we’ve come. It’s been a long, bumpy road. We can’t turn back now. We’re at a crossroads. We aren’t going anywhere. Our relationship is getting off track.} Lakoff claims that this is part of the conceptual system underlying the English language, and many other languages besides: It is a principle for understanding the domain of love in terms of the domain of journeys. The principle can be restated as a metaphorical scenario: The lovers are travellers on a journey together, with their mutual life goals regarded as destinations to be reached. The relationship is their vehicle, and it allows them to pursue those common goals together. The relationship is seen as fulfilling its purpose as long as it allows them to make progress toward their common goals. The metaphor involves understanding one domain of experience, love, in terms of a very different domain of experience, journeys.

More technically, the metaphor can be understood as a map-
ping (in the mathematical sense) from a source domain (in this case, journeys) to a target domain (in this case, love). The mapping is tightly structured. There are ontological correspondences, according to which entities in the domain of love (e.g., the lovers, their common goals, their difficulties, the love relationship, etc.) correspond systematically to entities in the domain of a journey (the travellers, the vehicle, destinations, etc.) (Lakoff, 1993).

Lakoff and Johnson (Lakoff & Johnson, 1980) adopted a procedure for naming such mappings, using mnemonics which suggest the mapping. These mnemonic names usually have the form: TARGET-DOMAIN IS SOURCE-DOMAIN. In this case, the name of the mapping is LOVE IS A JOURNEY. What constitutes the LOVE-AS-JOURNEY metaphor is not any particular word or expression. It is the actual mapping across conceptual domains, from the source domain of journeys to the target domain of love. The metaphor is not just a matter of language, but of thought and reason. The language is secondary and the mapping primary. The mapping is conventional, that is, it is a fixed part of our conceptual system, one of our conventional ways of conceptualising love relationships. The mapping theory functions for the majority of, if not all, metaphor.

This view of metaphor is thoroughly contrasts with the surprisingly common view that metaphors are only linguistic expressions. If metaphors were merely linguistic expressions, then different linguistic expressions would be different metaphors. Thus, We’ve hit a dead-end would constitute one metaphor and we can’t turn back now would constitute another, entirely different, metaphor. Yet here we have just one metaphor, in which love is conceptualised as a journey. The mapping tells us precisely how love is being conceptualised as a journey. This means of conceptualising love metaphorically is realised in many different linguistic expressions, which Lakoff defines as “metaphorical expressions”. As mentioned above, Lakoff’s theory of conventional metaphor is claimed to be somewhat universal i.e. love is not the only conventional metaphor he explores, life as a journey, emotions as temperatures (as noted in section 2.2), and so on, are also popular examples. He believes that novel metaphor is usually merely a novel take on conventional metaphor, and that new conventional metaphor is not so common. I tend to agree with Lakoff’s theory of a conventional metaphor underlying the majority of metaphorical expressions.

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4 “Something such as a verse to assist memory” (Collins, 2000).
2.7 Conclusion

As has been made apparent, I accept each theory partially but can find flaws with each one individually. I am in agreement with Searle’s description of metaphor processing, but I find Principle 4, as already noted, to be incomplete. Lakoff has concentrated on conventional metaphor which I think is important to understand but it is not the complete story. Each author proposes valid suggestions that are not necessarily wrong, simply unfinished. The comparison approach, as noted by Vogel (Vogel, 2001), is present in all of the theories to date.

Searle’s lengthy description of how we process metaphor is most impressive in its comprehensibility. He views the procedure from the hearer’s perspective and outlines the three steps involved in understanding. The first step is recognising whether or not metaphorical interpretation is at all necessary, the second is figuring out which of the 8 principles applies to this metaphorical expression, and the final one is realising which specific interpretation the speaker is conveying. Such a three-step process, and other two-step models are disputed by those who believe metaphor recognition is as rapid as recognising what is literally being said (Davidson, 1991; Vogel, 2001).

The only theories that I shall be examining further are those of Vogel and those of Davidson. Vogel’s views were outlined in the introduction, and it is on his work on which I base the main hypothesis that I intend on testing. In the Discussion, I will also look briefly at the claim, made by Davidson, that we always immediately recognise metaphorical expressions.
Chapter 3
Methodology
3.1 Introduction

The main problem with comparing the results of one psycholinguistic experiment with another is due to the fact that there are so many different means of conducting the studies, each as valid (or invalid) as the next. In this chapter I will discuss the problems regarding the various methods of experimentation relating to why I chose the means I did, I will also discuss the reasons behind my choices of instructions given to participants and the reasoning behind the assortment of metaphors I used in the study, and I will explain why I decided upon the questions that I asked about the metaphors and about the participants themselves.

3.2 Points of Disputation

As mentioned in the introduction, there are many areas within the realm of psycholinguistics that cannot be agreed upon. I have discussed a few such instances with significant regard to my own study compilation.

3.2.1 Categorisation

As is the norm in the majority of experiments, the subjects are categorised. They remain anonymous but certain data is requested for the demographics. This is usually done according to the replies they give to a number of questions, either asked at the beginning or at the end of the experiment itself. The usual categories used in psycholinguistic studies include: age, sex, linguistic training, handedness, education, and finally, native language. I will now briefly discuss each of these with regard to the choices I made when deciding on the questions I would ask each of the subjects.

Age

The age of the subject can often be extremely relevant. Language changes quickly and younger generations naturally speak slightly different to older generations. It is my presumption that metaphor also changes through the years, I decided to include a question asking the participants’ ages, by means of age brackets (Under 18, 18-24, 25-34, 35-44, 45-59, 60+). I hope to include subjects from all of the age brackets in the study. I believe that a balance of ages would ensure more accurate results.
Sex

As yet, it has not been proven that there is any definitive link between a person’s gender and their cognitive processes. Chaudron (Chaudron, 1983), as cited in Schütze (Schuetze, 1996, pg. 133), states that it “does not appear to be a relevant factor” but it seems that women typically score higher on tests of memory, production and comprehension of complex prose, fine motor tasks and speech articulation. Men score higher on tests of fluid reasoning, tasks that involve objects that are moving, tasks that require transformations of objects and tasks that require aiming. On average, females get better grades in every subject in school, and males are the majority among both gifted and mentally disabled populations. There are innumerable suggested reasons for these differences, ranging from the effect of hormones and brain anatomy to the environmental factors of being raised as a girl or boy. Diane Halpern (Kersting, 2003), a renowned professor of psychology has been quoted as saying that “research is the only way we can distinguish between those stereotypes that have some basis in fact and those that don’t” and that such research in this field will be “incredibly rewarding.” I decided to ask the male/female question even though I am doubtful as to whether or not it will be significant in this instance. But in the interest of aiding in the pursuit of conclusive evidence linking cognitive processes with gender, I have included the question in the unlikely case that I upturn applicable results.

Linguistic Training

It is clear that a background in linguistics certainly does influence the responses given in experiments, but this does not mean that their input is not as useful as that from subjects lacking in linguistic training. The responses from linguists are not necessarily better or worse, there is simply a difference between the two. Linguists may recognise quicker what it is that is being studied and that can somewhat affect the overall results (for further discussion see section 3.2.5). Schütze (Schuetze, 1996) cites Bradac et al. (Bradac, Martin, Elliott, & Tardy, 1980, pg. 968): “as a result of their training, linguists may tend to judge strings differently from non-linguists. Training in linguistics may produce beliefs or attitudes which are not shared by those who have not received such training. This suggests that the knowledge produced by linguists may become increasingly artificial; it may fail increasingly to model natural language.” There is an abundance of arguments for both opinions. Undoubtedly, linguists can express their opinions or judgements more easily and, presumably, more eloquently. I include both linguists and non-linguists in this experiment due to the fact that in my opinion there is simply
CHAPTER 3. METHODOLOGY

Education

A study conducted by Scribner and Cole (Scribner & Cole, 1981) amongst the Vai people of Liberia in Africa found very little evidence that literacy produces advantages for problem solving or other cognitive tasks. In fact, they concluded that neither literacy nor education have an effect on the ability to make grammaticality judgements. As in the case of linguistic training, it is clear that there would be differences in results given for open-ended questions depending on the subjects’ levels of education, but due to their exposure to their own language and their proficiency in it, it seems that native speakers all have the same capabilities when it comes to acceptability judgements. For this reason alone, I did not include questions about the level of the subjects’ schooling and education.

Handedness

It is unknown how dominance of the left hand (or of the right hand for that matter) develops. It has been proven to be the case that left-handedness is much more common in the mentally retarded and in those of higher intelligence, both sides of the spectrum. A significant amount of effort has been invested in researching handedness and brain lateralisation. Unfortunately, this effort has failed to result in many robust conclusions. Bold statements on the topic of handedness are quickly disputed or refuted. Yet the work persists, presumably because of an abiding hope that eventually some hypotheses will prove vigorous under the pressure of repeated experimentation. Psychologists have attempted to find connections between handedness and differences in cognitive ability, cognitive style, personality, health, etc. As noted above, the results are far from creating a coherent picture of how individual differences relate to handedness, but with further refinements in methodology, the studies may yet yield significant results (Hibbard, 2004). Of the general population, 8% are left-handed and I imagine I will mirror this figure in my study. There is considerable evidence that handedness correlates with differences in language processing. Work has been carried out in the area of associations between grammaticality judgement strategies and handedness. A study conducted by Bever, Carrithers, and Townsend (Bever, Carrithers, & Townsend, 1987) is described by Schütze (Schuetze, 1996), it suggests that the basic mechanisms for processing sentences differ. The experiment concluded that pure right-handers process in a more structure independent
method\textsuperscript{1} than right-handers with a familial background of left handedness. Although they only studied right-handers and right-handers with closely related left-handed people, it is assumed that their results are sufficient to indicate that there is a difference between right- and left-handed people in this domain. I decided to include the question of right/left handedness and also the question of whether right-handers had any close relationships with left-handers. I feel that mechanisms for sentence processing are very relevant to the question of how metaphor is processed, and so I wanted to see if the results I would return would correlate with the results acquired in the study described above.

\section*{Native Language}

It is probably obvious why the question of the subject’s native language is asked. Although there are many terms used for it (first language, L1, mother tongue), problems are evident for each and every one\textsuperscript{2} so I decided on that which I consider to be the most common, i.e. ‘Native Language’. It is probably obvious why the question of the subject’s native language is asked, native English speakers are more proficient in the language in question, and therefore I consider their opinions and judgements to be more accurate than foreign speakers of that language. It is especially difficult to consider foreign speakers of a language in psycholinguistic studies as their levels of the language may vastly differ. For those reasons I have decided not to include non-native English speakers in the experiment.

\subsection*{3.2.2 Question Types}

In my study, I use a combination of three types of questions, due to the fact that a single question style could be considered tedious and uninteresting for the participants. There are problems surrounding each question type, so I decided that due to a mixture of questions, my results would be unlikely to be dismissed on the basis that in the future a certain question type could be considered undependable.

\textsuperscript{1}They pay less attention to syntactic and semantic constraints, and more attention to conceptual and pragmatic features

\textsuperscript{2}Native language: The native language of the country may not be familiar to the participant. First language/L1: The very first language acquired by the participant may no longer be the language they feel they are most proficient in. Mother tongue: The participant may not speak the same language as his/her mother (Little, 2001).
• Binary Questions: These are questions that require ‘yes’ or ‘no’ answers. However it has been shown that in such binary questions, a bias towards ‘yes’ is typically observed.

• Open-ended Questions: These are questions that require a sentence as an answer, they can be as long or as short as the participant decides. The problem of irrelevance arises here, as the participants have free reign on what they say. These results are also more difficult to categorise.

• Scalar Questions: These are questions where the participant chooses their reply from a list of numbers, each number representing the degree of reply (e.g. a scale from 1 to 5, which corresponds to agreement and disagreement). Often the middle of the scale is chosen by participants when they are uncertain, which can incorrectly affect the results.

3.2.3 Instructions

“If we were to ignore all studies in which we believe the instructions to subjects were inadequate to convey the subtlety of a linguistic definition, the remaining studies could likely be counted on one hand” (Schuetze, 1996, pg. 133). For this reason, I was wary about including questions mentioning ‘grammaticality’ or ‘acceptability’. The question was altered from “Do you find this utterance grammatical?” to “If you heard a foreign speaker of English uttering this sentence, would you find reason to correct them grammatically?” A pilot study will be conducted, and from those results I can decide whether or not to change the wording of the question again and completely abandon the use of the word “grammatical”.

A sample passage with sample answers was included in the instructions. It examines a sentence which is non-metaphorical, and very simple, and the answers to the questions asked are obvious. The instructions also call attention to the fact that the questions are usually asked concerning the starred sentence only, a point which is reinforced in each asking of the question. Again, if the instructions do not appear clear to the participants in the pilot study, I will not hesitate to change them. The instructions given with each of the studies are attached as an appendix (see Appendix A).

3The sentence, or part of sentence, that is located between double stars.
3.2.4 Ordering of Passages

The order in which material is presented in experiments is of vital importance. It has been repeatedly noted that subjects treat the initial passage/sentence/phrase/word that they are asked to comment on in a different manner to the rest of the passages/sentences/phrases/words. It seems to be that participants pay much more attention to the first one and the rest of the positions are treated in the same manner as each other. Results by Greenbaum (Greenbaum, 1973) appear conclusive: generally, if it is a question of grammaticality, the subjects see the first option as significantly less acceptable. This was proved by changing the sentence order and conducting the study again, with new participants, and yielding the same results. This effect can be counteracted in two ways - either by issuing the subjects with a pre-study, called a ‘warm-up trial’, to get them used to the procedure, which has been proven to be effective, or by simply randomising the order they are presented in, which is overtly effective. In my study, I have issued the subjects with the instructions, followed by the categorical questionnaire, and then finally the experiment itself, which is a series of 15 passages followed by questions. The passages are in random order, with the order differing for each participant. As the questions are of different types (see subsection 3.2.2) and cover different issues, I didn’t find it necessary to randomise the order in which they appear (see section 4.2.2 for how this randomisation was achieved using the web-based experimentation tool).

3.2.5 Participants’ Awareness of what is being Examined

‘Fillers’ are almost always used in psycholinguistic studies. They are included in order to prevent the participant from realising what exactly the experiment is about and what is essentially being examined. A filler is a dummy sentence, that the participants rate as they did the others, and its purpose is to prevent the subjects from recognising similarities between the other significant sentences. The reason why we do not want the subjects to know what is being tested is because the results are then influenced by that knowledge. The data is more-than-likely skewed. Participants may then, either consciously or subconsciously, let this affect the results. The most common way in which this is done is when the subjects give the answers that they think the conductor of the study would want or not want, depending on whether they like the experimenter or not. Typically there are as many fillers as there are actual sentences that we are interested in. In my study, however, I don’t intend on using so many, as I feel the study will already be
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quite long, and also because I don’t think it is particularly obvious that I am studying negative metaphor. The length of the study can affect the results in two ways. The first is that potential respondents may not participate in the experiment at all due to the length of time it would take. The second is that the participants may get bored during the study and concentration will not remain constant throughout the experiment. They may even refuse to complete it.

3.3 Metaphors used in Experiment

Choosing the metaphors to use in the experiment was difficult. I wanted a balance of positive and negative metaphor, and also of novel and established metaphor, which was more complex than it seems. I carried out two separate experiments, on two separate groups of people. The first experiment had a total of 16 passages and the second had 13. They included the same fillers, and a mix of novel and established metaphor. However the difference between the two was polarity - where one survey included a positive metaphor, the other survey included a similar metaphor, the only difference being that it would be negative. I made up the passages and the metaphors that I used in the survey myself, and afterwards I attempted to group the metaphors into the aforementioned groups. To do this somewhat conclusively (keeping in mind that the categorisation of metaphor is purely subjective), I conducted a mini-survey, where I simply asked 5 people (who did not take part in the actual survey itself) how they would categorise each metaphor.

3.3.1 Novel vs. Established

The descriptions of novel and established metaphor are given above in section 1.3.1. It was according to these descriptions that those people I asked to categorise the metaphors into novel and established did so. The majority of decisions were unanimous.

Established

- *Sam had come to a dead end regarding her final year project, nowhere left to turn, so she ended up backtracking.* This metaphor is established, 4 out of 5 of the subjects were in agreement. The negative version states *No backtracking had been necessary.*

- *Mr. Finch knew that they were all in the same boat.* The subjects were unanimous that this was an established metaphor. The negative
version used was as follows: Mr. Finch knew that his class weren’t all in the same boat.

- *Her mind was wandering.* Again, the subjects were unanimous. The negative version is *Her mind wasn’t wandering.*

- *She is a prison guard.* 4 of the subjects said that this should be considered an established metaphor. *She’s not a prison guard* is the negative variant.

- *Her lips were sealed.* This was unanimous, and the negative version used is *she knew that her lips weren’t sealed.*

- *She was an island.* This was considered to be the negative version of the established metaphor *no man is an island,* which was not actually used in the study.

**Novel**

- *The cliff dared her to climb down* was agreed to be a novel metaphor, with only one subject disagreeing. The negative used was: *The cliff wasn’t daring her to climb down.*

- *It was a timid sun that shone* was unanimously agreed to be a novel metaphor. The negative version states *It was not a timid sun that shone.*

- *My brother, the rhino, charged around the house.* All subjects were in agreement that this is a novel metaphor. A negative form was not used in the experiment.

- *Her homework was screaming out to be completed.* The majority (3) subjects pronounced this metaphor novel. The negative version was *Her homework wasn’t screaming out to be completed.*

- *He was a computer.* Again, just 3 subjects ruled this to be novel. The metaphor used in the other version of the study was *He was not a computer.*
3.3.2 Positive vs. Negative

It is perhaps odd to hear that one could have a problem deciding on whether a metaphor is positive or negative. Take, for example, the established metaphor *No man is an island*, this is clearly negative, but when it is made negative, like in the example used in the study, *She was an island*. According to Lakoff’s conceptual mapping theory (as described in some detail in section 2.6), the conventional metaphor would be PERSON AS ISLAND which would naturally suggest that the negative version is actually *No man is an island*. However, I agree with the 5 people I questioned on this topic that the metaphor probably didn’t exist until Johnn Donne’s poem of the same name in 1617, in which case it was created as a negative (novel) metaphor, which in time became established. Therefore the negated version of this established metaphor is, necessarily, its opposite.

3.4 Conclusion

This chapter describes the reasons behind my choices of categorical questions asked, as well as outlining the basic reasons for the choices of the individual metaphors examined in the study, and the sections explain both the structure and the order in which the questions are asked about the metaphors.

As explained in the categorical section, I chose to include questions regarding gender, mostly to conform to the norm of psycholinguistic studies, and questions of age, as metaphor differs from generation to generation and interesting differences in this area may be uncovered. I included the question of linguistic training because it could be relevant and should be acknowledged if the responses to the open-ended questions are surprisingly well-expressed and intuitive, they are then perhaps not as ‘exciting’ if they are the responses of a person with much linguistic background. Education and Literacy is a matter that I am not interested in for the purposes of this study. A fluent capable native speaker is what I am concerned with, and the participants clearly already posses a high level of literacy judging from the fact that they are using the internet, and responding to a written survey. I included the question of handedness because it has been claimed that handedness is of high significance in terms of how we process sentences, and this is very relevant to how metaphor is comprehended. I would like to see if my results correlate with this theory. The final question in the categorical section is that of the subject’s native language. I would prefer to confine my study to native English speakers as I feel their intuitions about the language are superior to non-native speakers.
The reasoning behind my choices of metaphor was that I wanted to strike a balance between positive and negative and between novel and established metaphor. I decided to randomise the order in which the passages appear to assure that the order of presentation had nothing to do with the results achieved. Such reasoning should hopefully result in accurate, indisputable results and conclusions.
Chapter 4

Experimentation
4.1 Introduction

This chapter describes the entire experimentation process. I begin by discussing the web-based tool that I used to implement the experiments, including descriptions of how to set up the experiments, screenshots, and the drawbacks of this particular system. I go on to describe the pilot experiment and the effect this had on the final drafts of both versions of the experiment. Assessment of the expected respondents follows, including how they were informed of the internet address. The reason I decided to use an online system was simply because I felt I would obtain a much higher response rate using it than by printing out innumerable pages of paper and passing them around. Using the internet, a much wider audience can be reached and the online status of the tool allows participants a certain amount of flexibility in that they can choose the place from which they want to respond (home, work, college, etc.) and it can be accessed in their own time. In comparison with printing the experiments out on paper, the web-based tool was certainly more cost effective. As I mentioned previously (see section 3.2.1), subjects should be anonymous, and as the internet lacks the face-to-face situation that usually comes with paper surveys of this type, anonymity is easily preserved.

4.2 Web-based Tool

A full description of the web-based tool follows, including a brief introduction, a section describing how it is used and some of the difficulties encountered.

4.2.1 Introduction

The web-based tool was initially created as a final year project by a previous Computer Science, Linguistics and a Language student, Sarah Kenny (Kenny, 1998). It was then further developed on as final year projects by Fionnuala Hourihane (Hourihane, 2002), Niamh Ryan (Ryan, 2001), Medhi Guennouni (Guennouni, 2000) and Claire McGowan (McGowan, 1999). In her report, Sarah Kenny, the original developer, stated that “due to the fact that Computational Linguistics is a relatively new field in linguistics, it became apparent that no serious tools exist for those involved in creating linguistic experiments to model their experimental work on the Web”. Although this is no longer the case, indeed there are an abundance of survey tools available online with a wide range of analysis techniques, in most cases they cost money to use as the web space must be ‘rented’ for a period of time. I also decided that it would be more interesting to support a ‘local’ service,
i.e. Trinity College. Yvette Graham acted as the Experiment Manager, she is currently doing a research masters with the Computational Linguistics Group in Trinity. She was extremely helpful and swift to respond to my every query. She presently works with the tool, adding facilities such as experiment analysis and experiment editing, as well as working on improving the user interface.

4.2.2 Using the Tool

Yvette Graham, the project manager, created my profile, and provided me with my personal username and password. I could then log into the system and create an experiment. I began by creating the pilot experiment.

Creating an Experiment

To create an experiment, the first task is to name it, for example I called my first experiment ‘Pilot’, and then the system requires that I choose a username and password for the participants. They have to know both the username and the password in order to be able to take part. I then entered a brief description of the experiment for my own viewing only. I found the system to be easy to navigate and user-friendly.

The next page asked me to enter the instructions that I wish the participants to read before they begin the experiment, there was a large comment box for me to type into for this purpose (see figure 4.1 for a screenshot of this process) The following page offered me several different options. The tool offers the option for the experiment to have a number of separate sections, or just one large section. Within each section there is the option to have many different slides (pages). The order of both the sections and the slides can be randomised, if necessary. On each slide, there can be a passage and any number of questions (see figure 4.2 for a screenshot of this process).

For the pilot experiment, and each of the following experiments, I first added a passage (using the Add Passage button) and that was followed by four questions (by clicking Add Question). The slides appear in random order but the questions were always sequenced the same.

The first question asks the user how quickly they understood the starred sentence. This is followed by six options: a sort of graded scale of how quickly they perceived themselves to have comprehended it, the subjects have to tick the box that they feel applies to themselves. This was done by clicking the Add Answer button repeatedly (see figure 4.2). The second question on each slide asks what they think the starred sentence means. As this is an open-ended question, the participant is presented with a text box to type into. The
CHAPTER 4. EXPERIMENTATION

Figure 4.1: Screenshot: Writing the Instructions using the Web-Based Tool

Figure 4.2: Screenshot: Writing the Questions using the Web-Based Tool
third question asks about correcting a foreign speaker uttering the starred sentence, and why. This is again an open-ended question, so the subjects get the text box to type into again. The final question is specific to the passage, and merely serves to conclusively ensure that the subject has understood the metaphor as I intended it. This is generally a binary question, requiring only a ‘yes’ or ‘no’ but I left it as open ended in case the participant would like to clarify anything.

After I had completed typing all the passages and questions, I clicked the New Section button and started on the demographics. This was done in the same manner as the previous section. I then continued clicked the option entitled Finish Experiment, and was led to the final page where I was asked to enter a few final words of thanks to the participants. The experiment was then finished and I was directed back to my homepage. The entire procedure was very straightforward.

4.2.3 Problems with the System

As the system is still a work in progress, there were many problems and faults to be found.

- The first problem that I incurred is that it only actually functions on certain computers. It is not known why this is so, which just makes it more frustrating. It works on all the college computers, except laptops, and that includes both laptops accessing the internet on the college network and from outside college, and it only works on some desktops outside college. The experiment can therefore not be accessed as easily by the participants as I had initially hoped.

- A second problem encountered was that the ‘back’ button, which appears on all browser windows, cannot be used. If it is pressed, then in the participant’s case, it will lead to a blank screen and the user has to retype the URL and restart the study. In my case, as the survey administrator, it leads me back to my homepage. This was a terrible disadvantage when I was creating the surveys, as trying to edit something typed on the previous page was impossible.

- Another fault with the web-based tool is that there is no option available to preview an experiment before confirming it. Furthermore, once the experiment has been created, it is impossible to edit it, so errors like spelling mistakes were either permanent, or the whole experiment had to be redone. Text was not wrapped, and this made it awkward for participants as a lot of scrolling was necessary.
• Another little glitch that I found annoying was that when I was analysing results, the option to analyse them by question didn’t work at all (nothing happens when the button is clicked upon), so all data had to be taken subject by subject, which was not ideal. In addition to this, certain common symbols were not recognised. For example, when I typed an apostrophe, it looked correct to me, but when I saw it in the experiment, it had transformed into a question mark (can’t appeared as can’t). No text formatting is possible so in order to ‘highlight’ a specific sentence, it was necessary for me put double stars (**) preceding and after the text.

• The final, and potentially the most problematic, fault is the fact that the system is very insecure. The passwords of the experimenters can be viewed by anybody online, although it is unlikely that people would discover how to do this, as it is not at all obvious. But I came across other people’s usernames and passwords accidentally and I’m sure that if any hacker were interested, he/she could easily do the same. This makes the system completely unsuitable for confidential or even high interest studies for fear that the data would be reproduced or manipulated.

These faults were displeasing, but could be overlooked as the web-based tool certainly had more advantages than disadvantages and did do exactly what it was supposed to.

4.3 Pilot Experiment

The pilot experiment was carried out to ensure that there weren’t any errors with the experiment itself. It was carried out using my classmates as subjects. After looking at the results, I decided to change question 3 from “If you heard a foreign speaker of English uttering this sentence, would you find reason to correct them grammatically?” to “If you heard a foreign speaker of English uttering this sentence, would you find reason to correct them?” I deleted the word ‘grammatically’ because it appeared to confuse the subjects and they tended to reply to that question with special attention to punctuation, which is irrelevant to my study. As I had mistakenly not defined the word ‘grammatical’, it was not surprising that some of the participants were misled.
4.4 Respondents

For the pilot experiment, as already mentioned, I emailed the URL along with password and username to my class list. For the following two experiments, I emailed all my friends asking them to respond, I also asked them to pass it onto their friends. As well as that, I posted messages onto random Google1 ‘Groups’ discussion boards, at the suggestion of my supervisor, asking readers to participate. I only posted to the more popular groups, yet the response rate was still fairly low, and many of those who took part had a background in linguistics which is why they were intrigued by being part of a ‘psycholinguistic study’.

4.5 Conclusion

In conclusion, although I did point out a great many areas that could be improved upon, including the insecurity of the system, the fact that the Back button doesn’t work, and its incompatibility with many computers for an apparent unknown reason, I do still recommend the web-based tool. It suits its purpose perfectly, and was easy to use as is described in detail in this chapter. Screenshots are also included substantiating the claim that it is user friendly. For this reason I feel it would suit all users, as long as they were somewhat computer literate. Pilot studies are of utmost importance in the experimental psycholinguistic domain. They are required to ensure that firstly, the instructions are clear and secondly, that the questions are correctly phrased. They also give the experimenter an idea of how long the study takes to complete so that they can inform future participants. I changed one question containing the subjective term ‘grammatical’, after examining the differing responses. This section also explains where I expect to get my respondents from, i.e. classmates, friends and friends of friends, as well as posting the URL of the online experiment onto internet forums. In the following chapter, I will discuss how many respondents I had, and how they were contacted, and I will discuss which method worked the best, and contrast the two.

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1www.google.com
Chapter 5

Results
5.1 Introduction

This chapter is a run-down of all the results acquired by the two surveys. There were 57 responses in total; 19 from the first study and 38 from the second. There were 12 non-native English speakers which I choose to ignore completely for reasons stated in section 3.2.1. The results I am particularly interested in are the replies to the categorical section, and the responses to questions 1 and 3 from each passage (excluding the fillers). Questions 2 and 4 served only to ensure that I had means of knowing whether or not the participant understood the metaphor as intended. Question 1 was a subjective view of how long the individual perceived they took to understand the metaphorical utterance. They were given a scale from 1 to 6, so the results are easily tabularised, and graphed. The third question was a binary question, requiring ‘yes’ or ‘no’ in response. As it is necessary to have actual numbers to create accurate graphs, I have translated these two responses into 1 and 0, respectively, in accordance with the standard laws of logic. Therefore, a more precise average can be calculated. The results from the categorical section are straightforward and presented separately to the results from the actual questions about metaphor. These figures will be examined together in the following chapter, to see what influence, if any, the demographics had on the replies. The results, in the form of graphs and tables, are initially presented here and are further explained and detailed in the Discussion.

5.2 Obtaining the Results

The replies entered for each question were stored by the experimental web tool. To view them, the experimenter simply highlights an experiment in the homepage, and clicks the option View Experiment Details and is lead to a page which tells them how many respondents there have been, and asks them how they wish to view the results - either by subject, or by question. Due to the fact that the By Question button was inactive, the By Subject option had to be used. See figure 5.1 for a screenshot of the experiment being analysed by subject.

The slides could then be viewed (in the order in which they were created, not in the random order in which they were responded to by the participants) along with the responses given by the subjects. The categorical section was presented first, followed by the rest of the slides containing passages and questions. Then each person’s responses were simply gone through, one by one, and all the data was input into a spreadsheet that had to be created.
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Figure 5.1: Screenshot: Analysing the Results Subject by Subject

on Microsoft Office Excel 2003.\textsuperscript{1} There were three different spreadsheets created, one for the demographics (entitled Subject Data), one for the responses to question 1 (entitled Perceived Times), and one for the responses to question 3 (entitled Change Utterance). The subjects were entered in the same order each time in order to ensure that the information in the spreadsheets corresponded accurately to each other.

Microsoft Excel is an excellent package for creating graphs and charts. It is user-friendly and practical. For the purposes of this project it was used to create both pie charts and single and clustered bar graphs, which are presented in section 5.4 and 5.5, as well as in the following chapter. It also employs very sophisticated input devices. It can work out averages and more complex formulas, automatically, and the solutions can appear as a separate rows or columns, wherever is specified. They can also be automatically updated, as can all the charts, when any figures are changed. See figure 5.2 for a screenshot of the Perceived Times spreadsheet in Microsoft Excel.

\textsuperscript{1}Hereafter referred to as ‘Microsoft Excel’.
Figure 5.2: Screenshot: A View of the ‘Perceived Times’ Spreadsheet in Microsoft Excel
5.3 Response Rate

As stated in the introduction, there were a total of 45 replies from native English speakers; 15 responded to the first study and 30 responded to the second. The web tool incorporates an automatic device which counts how long each response took to enter and how long the experiment lasted in total for each subject. The second version of the study was significantly shorter and could be completed in, on average, 14 minutes, whereas the first version took more time, lasting an average of 20 minutes. This time difference explains why the second survey was more popular. Most of the respondents were either friends, or friends of friends. The URL was distributed, along with the password and username (as previously described in section 4.4), via email to friends and it was requested that they pass it on to anyone who might be interested in participating. This proved a much more fruitful avenue for gaining replies than the technique of posting to message boards on the internet, which appears to have been quite unsuccessful.

5.4 Replies to the Categorical Questions

![Figure 5.3: Screenshot: Responses to the Categorical Questions](image)
CHAPTER 5. RESULTS

These questions were carefully formulated to ensure clarity and relevance (see section 3.2.1). It was hoped that the replies would imitate the general population, but that was a very difficult task with such a small number of participants. The results are presented question by question. See figure 5.3 for a screenshot of one subject’s responses to the categorical section.

Gender

The participants consisted of 25 males and 20 females (see figure 5.4). A rough balance has been maintained between the sexes, considering that the actual ratio between the two is estimated to be 1:1.

![Figure 5.4: A pie chart showing the gender of the participants](image)

Age

The ages of the participants ranged widely (see figure 5.5). None of the subjects were under 18 years of age, which was unsurprising as the message boards to which the request was posted on the internet were aimed at older people, and the friends to whom the URL was sent were all aged over 21. One particular friend, who is in his 50’s, forwarded the email to his friends and that explains why there are so many participants from that age range. The age group with the most respondents was the 18 to 25 year old one, with 17 members, which was expected as that is the group to which the experimenter belongs.
CHAPTER 5. RESULTS

Linguistic Training

As many of the participants are classmates and friends I had become acquainted with during my four year career as a Computer Science, Linguistics and German student, a lot of them had some level of linguistic background (see figure 5.6). The few subjects who responded from the message boards were also of linguistic background, and this was most likely the reason why they were interested in participating in the experiment. Overall, there were 10 subjects with linguistic background and 35 without any form of linguistic training (excluding language learning). This, naturally, does not reflect the general population, but it does accurately reflect the experimenter’s own social circle.

Figure 5.5: The number of participants that fall into each age group.

Figure 5.6: A pie chart comparing those with linguistic training and those without.
CHAPTER 5. RESULTS

Handedness

Handedness upturned a surprising result. Out of the 45 participants, 12 were left-handed and 33 were right-handed. That is a very high percentage (27%) of left-handers, when it is compared to that of the general population, which consists of approximately 8% left-handers, less than 3 times the figure acquired for this study (see figure 5.7). Another question asked was whether

![Figure 5.7](chart1.png)

Figure 5.7: A pie chart comparing right-handers with left-handers.

![Figure 5.8](chart2.png)

Figure 5.8: A pie chart comparing ‘pure right-handers’ with left-handers and those with familial sinistrality.

the respondents had close left handed relatives or friends. Interestingly, it was only left handed people who had close friends who were left-handed, the others (who answered positively) had close family members. The pie chart
of figure 5.8 shows the percentage of the respondents who were pure right handed compared to those who were left-handed or who had left-handed relatives.

5.5 Metaphor Question Responses

As previously noted in the introduction, the questions I am concentrating on are questions 1 and 3. The other two questions were only looked at to ensure that the metaphors were correctly comprehended by the subjects. This was the case in all of the studies involving native speakers. However, I have not completely disregarded their comments, I fully intend to use them and discuss them in the following chapter.

5.5.1 Question 1

“How long did it take you to understand the starred sentence? Did you understand it...”

1 = Immediately,
2 = Almost Immediately,
3 = Somewhere in between,
4 = After a little time,
5 = After a little more time,
6 = Still don’t understand it?”

The respondents had the option to choose any number between 1 and 6. The number 6 was only actually picked by non-native speakers, which was good. The graph below shows the average responses from the participants, the actual individual responses are available in table form in the appendix (see Appendix E, tables 1 and 2). The metaphors are mixed, both established and novel appearing alongside each other, the positive versions of the metaphor are printed in blue, and the negative are purple.

It can be seen from the graph (figure 5.9) that the negative metaphors generally have a higher response than their positive counterparts, as per my hypothesis, but this will be later examined in greater detail regarding novel and established metaphor separately.
CHAPTER 5. RESULTS

5.5.2 Question 3

“If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them? If so, why?”

This was an open-ended question in order to allow for elaboration. Each participant gave an initial ‘yes’ or ‘no’ response followed by their reasoning in the case of a positive answer. Generally speaking, if the participant said that they would change the sentence but in their elaboration they referred to something that had nothing to do with the metaphorical expression between stars, then I would disregard their response and set it to the default ‘no’. ‘Yes’ and ‘no’ were then assigned the binary values of one and zero (for the purposes of graph creation with Microsoft Excel). The graph that resulted, therefore, has a Y axis of between 0 and 1 - the higher the value, the more people wanted to correct the foreign speaker. Again, novel and established metaphor are mixed and blue indicates positive and purple indicates negative. The graph (see figure 5.10) shows the average responses from the participants for each metaphor. As is clear from the graph, negative metaphor has, once again, higher values than the positive. This means that more people wanted to change/correct the expressions that were negative.
Table 5.1: A breakdown of the positive responses from Question 3.

<table>
<thead>
<tr>
<th></th>
<th>No. of Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>48</td>
<td>66</td>
</tr>
<tr>
<td>Negative</td>
<td>93</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>141</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 5.1: A breakdown of the positive responses from Question 3.

metaphors than those that were positive metaphor. The table (see Table 5.1) shows us that there were roughly twice as many corrections made\(^2\) to negative metaphors as there were to positive metaphors.

\(^2\)i.e. If there actually were corrections made in the hypothetical situation as described in question 3.

Figure 5.10: A bar-chart showing how often each metaphor would have been corrected.

5.6 Conclusion

In this chapter I have described how I obtained the data and how I contacted the respondents. I also presented the actual data collected, exhibited by
means of screenshots, graphs and tables. The data was obtained by inputting all of the responses given using the web tool into a spreadsheet in Microsoft Excel, a user-friendly package used to easily create charts of many different types. It was used to create pie charts and bar charts in this instance.

Firstly the categorical data was presented. I indicated that there was a satisfactory balance between males and females, but that the handedness results were slightly odd, considering that only 8% of the general population are left-handed, but that 27% of the participants in this study were. 22% of the respondents had previous linguistic training, a fact that can be explained by the simple realisation that I am a linguistics student and I tend to befriend those I spend time with, succeeding in gathering subjects for my experiments. Another reason for the high amount of linguists is that it is mainly those interested in linguistics who are attracted to participation in a survey that is psycholinguistic in nature. There was a good distribution of age groups, with the largest participant age group being my own; the 18 to 25 year olds. There were no respondents under the age of 18, which I feel was not an adversity. Children do not learn to process metaphor proficiently until they are approximately 12 years old and I feel that only once they are 18 years of age have they significant experience in using this speech act that they can accurately judge it.

This chapter then examined the two most significant questions of the study, questions 1 and 3, providing both tables and graphs to clarify the data shown. The graphs were created using Microsoft Excel and working with averages and percentages.

From the averages calculated and presented in this chapter, it is clear that the negative metaphors (both novel and established as they have not yet been analysed separately) were found to be more difficult to understand and also more likely to be corrected if a foreign speaker of English were to utter them. This evidence so far seems to correlate the first part of my claim, which is that negative metaphor is more difficult to understand than positive metaphor.
Chapter 6

Discussion
6.1 Introduction

This chapter examines further the results presented in the preceding chapter. It begins by separating novel metaphor from established metaphor, and examining the findings to see if the initial hypothesis can be substantiated. The second section of the chapter searches for correlation between the results and the demographics, looking at each of the items individually in the pursuit of links.

6.2 Separating the Metaphor

The results from question 1 and question 3 are divided into the two categories: novel and established, and re-examined using graphs for ease of understanding.

6.2.1 Question 1

The results to this question are presented again, in two groups this time. It is first important to note that all metaphor has to have at least the value of 1 on the bar chart, as that was the lowest option for the participants to choose. I will go through the metaphors individually, commenting on the average values each one received and suggesting reasons why this may be the case.

Established Metaphor

Figure 6.1 corresponds to this subsection.

- Sam: This metaphor proved to be more difficult to understand than I had expected. This is perhaps because many subjects had a problem with the word ‘backtracking’, which is primarily a Prolog term. So, although the subjects all comprehended the metaphorical expression as I had intended, some found that particular term unfamiliar. The negative version of this metaphor had an almost identical result.

- Finch: The positive version of this metaphor has a very low value, which suggests that it was very quickly processed by all participants. The negative version also yields a low value, 1.6. The reason why it is higher than its counterpart is because it is simply less familiar.

- TV: The figure for this positive metaphor is 1, which is the lowest it could possibly be, indicating that every participant understood it
Figure 6.1: A bar chart showing the average perceived times of established metaphor immediately. The negative version has a value of 1.53 which is also very low and as been given a slightly higher value due to its unfamiliarity.

- Ben: This metaphor has almost identical values for both positive and negative, approx. 1.3, which suggests that both versions are probably used as often as each other, indeed, this was the suggestion made by the subjects who decided on whether the metaphors were novel or established (see section 3.3.1).

- Ruby: The positive version of this metaphor was not included in the study as it is so common that it was assumed that the participants would understand it immediately, and award it an average value of 1. The negative version, although much less common, got a very low value of 1.53.

- Johnny: As above, it was presumed that the positive version of this metaphor would receive the value of 1. The negative version which was examined was awarded a value of 1.87, which is the highest value received by an established metaphor in the study, although still lower than 2, which means that it was still consistently understood promptly.
Figure 6.2: A bar chart showing the average perceived times of novel metaphor

**Novel Metaphor**

Figure 6.2 corresponds to this subsection.

- Andrew: The positive version of this metaphor was immediately understood, but the negative version took significantly longer (0.7). The difference in times between these two novel metaphors is higher than any of the differences between the established positive and negative metaphors.

- Barbie: The positive version was understood quite quickly, with a rating of 1.4, and the negative was a little less immediate, with a rating of 1.8.

- Nora: There was a very large difference between the two in this instance, 0.9, which suggests that even though this metaphor was unfamiliar (and hence, novel), it was understood more easily in the positive sense than negatively.

- Cliff: This metaphor was not immediately processed; it was awarded an average of 2, by the participants. The negated version had a average perceived time figure of 2.55, which was the highest recorded average in the experiment. There is a notable difference between the two.
• Rhino: It was perhaps an oversight not to include the negative version of this metaphor. The positive form got an average of 1.25, indicating that it was perceived to be almost instantly comprehended by the respondents.

6.2.2 Question 3

In this subsection I describe both categories of metaphor separately and discuss the possible reasons for the results.

![Figure 6.3: A bar chart showing the average results of question 3 for established metaphor](image)

On figure 6.3 the scale can only possibly range from 0 (No) to 1 (Yes), so it is not surprising that the maximum average is low. The participants clearly had a tendency to correct the negative established metaphor more quickly than the positive versions. Johnny, Finch and TV are all around the 0.5 mark, which indicates that about half of the participants would correct the utterances. All of the negative metaphors are more quickly corrected than the positive, which remain on or below the 0.2 mark. It seems perhaps odd some of the respondents thought that positive established metaphors should be changed at all; this will be discussed further in section 6.3 where the respondents’ comments are taken into account.

It cannot be seen from the bar chart, but Rhino was a novel positive metaphor and nobody recommended that it be changed. This goes to show that novel metaphor can be fully accepted as part of the English language, but the same has not at all been seen for the case of negative metaphor, neither
novel nor established. It is again clear that negative novel metaphor is more easily criticised than positive. However, with the exception of the rhino metaphor, the positive novel metaphor was corrected by the participants. This is discussed in section 6.3, where comments from the respondents explain the discrepancies. Certainly though, it can be seen from both figure 6.2 and 6.3 that people were more inclined to correct negative metaphor than positive metaphor and that they were also more inclined to correct novel metaphor than established.

6.2.3 Deductions

In conclusion to the previous two subsections, I would merely like to point out that the hypothesis appears to be correct. The established metaphor is acceptable in positive form but when it is negated, it is seen as less valid. The evidence backing this claim is from questions 1 and 3, where the subjects responded saying that they did not understand the negative established metaphor as instantly as the positive, and because they say that they are more ready to correct foreign speakers uttering the negative expressions than those uttering the positive ones. Novel metaphor, both positive and negative, was regularly corrected, although apparently easily comprehended, with the positive metaphor certainly beating the negative in the race to comprehension. The comments left by the participants explain why they corrected the utterances so readily - because of their unfamiliarity. From Table 6.1, it is clear that there is an explicit link between the two sets of figures, those from
Table 6.1: Averages for Established and Novel, Positive and Negative Metaphor

<table>
<thead>
<tr>
<th></th>
<th>Established +</th>
<th>Established -</th>
<th>Novel +</th>
<th>Novel -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Times</td>
<td>1.28</td>
<td>1.59</td>
<td>1.44</td>
<td>2.13</td>
</tr>
<tr>
<td>Change Utterance</td>
<td>0.16</td>
<td>0.39</td>
<td>0.28</td>
<td>0.52</td>
</tr>
</tbody>
</table>

question 1, which ascertained how quickly the participants comprehended the metaphor, and question 3, which established whether or not the participant would wish to correct a foreign speaker if they heard him uttering the metaphor. Both tables show the same thing: The metaphor seen as most acceptable is the positive established version, followed by the positive novel, then the negative established, and the negative novel. Such a sequence is further evidence that the hypothesis is accurate.

6.3 Comments from Participants

Participants were asked open-ended questions in questions 2 and 4, and some of them took this opportunity to leave their own comments and opinions. Question 3, which asked if the participants would correct a foreign speaker of English, was also left open-ended in case the participants wanted to elaborate (indeed they were specifically requested to elaborate). They left a range of comments.

Interestingly, many respondents, who said they understood the metaphor immediately, still said that they would correct the foreign speaker. From the comments left, it seems that there are three reasons for this:

The first is because they were unfamiliar with the expression (i.e. novel metaphor and negative established) and they would assume it to be a mistake if spoken by a foreign speaker, but not if it were to be spoken by a native speaker. Indeed, one respondent (Subject 6 of Version 1), who had immediately comprehended the metaphor\(^1\) said that she would still correct a foreign speaker because it “is unfamiliar although I think it is a lovely expression”.

The second reason is because they felt there was a “like” or “similar to” missing. These participants basically see metaphor as an elliptical simile, which is a common misconception (see section 2.2). They could understand it straight away but felt that it was “incomplete and ungrammatical.”\(^2\)

\(^1\)Nora - : “It was not a timid sun that shone in the sky”
\(^2\)As quoted from the reply of Subject 19 of Version 1 in response to question 3 of Ben +.
The third reason for corrections when there was perfect immediate understanding is because subjects felt that metaphor should not really be used by foreigners. They should use more direct language to ensure they can be understood. Actually this was a very uncommon opinion, only noted by two subjects.

The main reasons for corrections, when the subject’s understanding of the metaphorical expression was not ‘immediately’, were obviously because the subject said that it expression should be paraphrased as the meaning is not instantaneously clear. Other noteworthy comments were those that commented directly on the fact that the metaphors were negative. One subject, commenting on the negative novel metaphor, ‘Nora’, said that “the construction was unnecessarily complicated.” Another subject said that “these phrases do not work well when negative”, this sentiment was echoed by many others, saying that the expressions were less familiar when they were negative and that “it just sounds all wrong”.

6.4 Categorisation

The results for male and female were much the same, no differences to be found between either the length of time it took them to understand the metaphor, or their willingness to correct foreign speakers’ attempts at metaphor use and creation. The same can be said for ages: all of the age groups showed much the same results. The sections that did show differences, however, were the subjects with linguistic background in comparison to those without linguistic training, and also between right-handers and left-handers.

6.4.1 Linguistic Background

The subjects with linguistic training were much more able to call a metaphor a metaphor. Those without such training tended describe them as “proverbs”, “idioms”, or “similes”. A second point of note is that those with linguistic background tended not to correct the foreign speakers as readily. This could perhaps be attributed to the fact that linguists tend to associate themselves with descriptive grammars rather than prescriptive grammars (see section 1.3.4), hence, many of them may find the metaphors not to be unacceptable by the very fact that they have been uttered and easily understood. A final point worth noting in relation to the subjects’ linguistic background was that those participants with linguistic experience were more likely to leave comments and explanations than those without. This could be due to the fact that the linguists (certainly in the case of my classmates) would probably
have had previous personal experience in conducting studies and they realise how valuable comments and objective opinions can be when analysing the results.

6.4.2 Handedness

In the categorical section of my study, I included a question asking which hand the participant considers themselves to be most capable with, and if they had any left-handed relations or close friends. At first I was sceptical about incorporating such questions, as I deemed them unnecessary, but as it made no difference to the survey itself, I decided to include them anyway. Out of the 45 people who participated, 22 were either left-handed or had a close left-handed relative. To my surprise there was a difference to be noted in the results according to handedness. Although results across the board were similar for questions one, two and four for each passage, the results for question three were not. Question three asked “If you heard a foreign speaker of English uttering this sentence, would you find reason to correct them?” There were 23 instances in total of people saying that they would change the utterance even though they had estimated that they had comprehended it instantly. Of these 23, 15 were either left-handed or had a close left-handed relative. This is just over 65%. This is an extremely high figure and it appears to be constant for all categories; male and female, all ages, linguistic background or non-linguistic background. This could be due to a number of factors. As mentioned previously (section 3.2.1), it is believed that handedness may be linked to cognitive ability, cognitive style or even personality. These suspicions have never been verified. I believe that the link may be closer to personality than to certain cognitive devices, this is because the length of time it took the subjects to comprehend the metaphors does not correspond to handedness, nor does the actual interpretation. Perhaps the reason that they would more readily offer suggestions as to how the sentences uttered could be improved upon even though they had an immediate understanding of the metaphor is more due to something in their personality that makes the person more ready to help (or criticise) another person.

6.4.3 Metaphor Recognition

Although the study was not geared towards examining how quickly the participants recognised that what they had to deal with was a metaphor, it can still be somewhat reliably concluded from the responses. None of the participants misunderstood any of the metaphors. None of the participants
took a ‘literal’ interpretation instead of a metaphorical one. In most of the cases (in fact, 64%), the subjects had an immediate understanding of the expression, which would imply that their recognition of the speech act of metaphor was much quicker. Based mainly on the fact that every participant took the intended meaning from each passage, I infer that Davidson (Davidson, 1991) is correct in his claim that metaphor recognition is instantaneous. This is, however, inconclusive with respect to verifying or refuting the two-step interpretation models.

6.5 Conclusion

When analysed separately, the two categories of metaphor revealed differences. As expected, the positive established metaphor was easiest for the respondents to understand\(^3\) and accept.\(^4\) The second easiest was the positive novel metaphor, followed by negative established and negative novel. These results are as expected. The negative metaphor was seen as more complex to the subjects, and in both categories, both positive and negative, the established metaphor was more easily comprehended and accepted than the novel.

The comments and elaborations left by the subjects indicate without doubt that many of the subjects recognised that it was the negation that made the sentences too complex, and suggested that they could be easier understood if they were paraphrased (which defeats the purpose of a metaphor).

I examined all categories in order to discover whether or not the demographics had anything much to do with the responses given. I can conclude that regarding the metaphors used for this study, age was not a relevant factor when it came to understanding and familiarity, which contradicts what I had previously thought (see subsection 3.2.1). There were also no differences observed between male and female responses, a result which I had anticipated.

Whether or not the participant had linguistic background did have an effect. Those in possession of linguistic training tended to leave comments more frequently, and these comments tended to be longer. I have speculated that this may be because they know how important commentary can be to an experimenter during the analysis period. Linguists also accepted the metaphor without indicating that they would correct the foreign speaker. In my opinion this has to do with their notion of a descriptive grammar, where

\(^3\)As taken from the results of question 1.
\(^4\)As taken from the results of question 3.
fundamentally most utterances used are deemed ‘acceptable’.

Another aspect of the demographics that appeared to have an effect on the results was whether or not the subjects were left-handed or had left-handed relatives. If the subjects did have this left-handed influence then they tended to be more ready to correct the foreign speaker’s utterance, even if they had a swift and perfect understanding of the metaphor used. This could be perhaps attributed to their personality; maybe they are more ready to assist a foreign person with their language. There are various cognitive processes that are thought to be related to handedness but the issue I have isolated does not seem to be associated with any of the processes that have been suggested.
Chapter 7

Conclusion
7.1 Introduction

This is the concluding chapter to my dissertation. In this chapter I present a summary of the entire project, recapping on the most significant parts of each chapter. I then discuss the achievements that I feel I have made through this project regarding established and novel metaphor and the effects that negation has on them both. Finally, I examine the issues that I feel have been raised by my project which warrant further study.

7.2 Summary

The aim of this project was to attempt to verify the claim that negative established metaphor is difficult to understand and that negative novel metaphor is generally unacceptable. This hypothesis was first proposed by Vogel (Vogel, 2001). In order to test the claim, I conducted an experiment using a web-based experimentation tool, designed by graduates of Trinity College Dublin as part of their degree course. The experiment consisted of two versions of a web-based survey. One contained positive and negative novel and established metaphors, and the other contained mostly ‘opposite’ metaphors (i.e. where a metaphor is positive on the first version, it is negative on the second version and visa versa). The ordering of the passages and the questions about the metaphors were of vital importance, as well as the questions asked in the categorical section. Fillers were also to prevent participants from recognising what it is that was being studied.

A full description is given of how the experiment was implemented using the web-based tool, and the problems that were incurred while using the system. The participants were generally friends and relatives and their friends and relatives. The means I used to spread the URL, the username and the password of my experiment system was email.

There were 45 responses in total, excluding non-native English speakers, as I felt it would have been meaningless to analyse such data considering that each of the non-native speakers had different levels of English and different native languages. The results were charted and graphed using Microsoft Excel, and they were discussed in detail.

A correlation was uncovered between handedness and a tendency to correct a metaphor even though perfect, immediate comprehension was acknowledged. In fact, in 65% of the instances where such a correction was suggested, the participant was either left-handed or had a close relative with a preference for using their left hand. Although it seems extremely high, relative to the large percentage of left-handers and respondents with familial sinistral-
ity, the figure is only moderately high. A second point worth mentioning is that the commentary was more frequent and more elaborate from those with linguistic background than from any other group of people. They also had a tendency not to correct the foreign speakers as regularly.

The most noteworthy results of all were that the positive established metaphor was considered to be the simplest for the participants to process, this was followed by the positive novel, the negative established and finally, the negative novel. Such a sequence could have been predicted by the proposed theory. The implications of these results are further discussed in the following section.

7.3 Achievements

Within the domain of psycholinguistics, it is extremely difficult, if not altogether impossible, to conclusively prove a theory. Disproving a theory can be accomplished much more easily. The main achievement that I feel I have made is not to have disproved the hypothesis that established metaphor is more difficult to process when negated and that negated novel metaphor is basically too complex to process and paraphrasing is probably more effective. Davidson (Davidson, 1991, pg. 248) alleges that “there are no unsuccessful metaphors, just as there are no unfunny jokes”. Although the negated novel metaphors are understood, they are not very well received by the participants of this study. Davidson’s view suggests that the negative metaphor used in this study is indeed still metaphor and so the techniques used to process it should be the same, but the fact remains that the techniques appear to be less successful within the scope of negation.

My achievement of supporting the theory is very significant. The goal that I had been working towards was, namely, to verify the hypothesis. However, the reason why it is difficult to conclusively prove anything is mainly because the preferred methodology differs starkly from experimenter to experimenter. There are so many aspects of the experimentation process that can be variable that it is inconceivable that a single one exists that all researchers would agree to adhere to. Another major problem, already mentioned, is the inaccuracy of human judgements and perceptions. Inconsistencies can never be avoided.

I strongly believe that the methodology and the experimentation that I employed was as meticulous and precise as any previous experiments of this type conducted, and that the results cannot be disputed by any substantial means. However, I do fully accept that it is possible to challenge the implications of the results that I have outlined.
7.4 Issues for Further Study

The matters that have been addressed by this study which certainly warrant further research are numerous. The first is the web-based experimental tool, the problems with which were extensively outlined in section 4.2.3. It has the potential to be a great aid to very many experimenters if the flaws with the system were less prominent, and especially if a solution to the security problem (visible passwords) could be implemented.

Handedness is an interesting domain which has not yet been fully explored. It is unknown how a preference for one hand or the other develops, and how and why this seems to affect a person’s cognitive processes. Such an effect appears to have been validated by this experiment, but as yet no precise correlations have been established. As well as that, in this study, and in previous other studies (Bever et al., 1987), a familial background of left-handedness has been considered ‘left-handed’, whereas only pure right-handers with no left-handed relatives are considered ‘right-handed’. This is because it is difficult to recruit a significantly-sized number of actual left-handed participants. It seems wasteful to include right-handers at all in the left-handed category due to the fact that they may or may not have the desired genetic make-up (indeed if at all it exists). Future study is certainly a requirement in this area.

The whole issue of negative metaphor is an issue that demands more attention. With such extensive literature on the topic of metaphor, it seems ridiculous that its negation has been ignored for so long. The results that I have acquired and the suggestions that I have proposed should be further tested through various other means of experimentation. It would be extremely interesting to see if future results correspond to mine, as I predict. As I have been a pioneer in this niche domain, I envisage that further study would not be as daunting and intimidating because there now exists a full set of results with analysis that should be used for comparison purposes at the very least.

7.5 Conclusion

The theory that I wished to substantiate was that of Vogel (Vogel, 2001) who initially claimed that negated novel metaphor was unachievable. I have certainly not disproved the theory by acknowledging that the participants can still process a negative novel metaphor. I have proved beyond reasonable
doubt that they are certainly the most difficult type of metaphor to process.\footnote{The other types being positive and negative established metaphor, and positive novel metaphor.} This was the conclusion reached from analysis of the two questions asked regarding how quickly the subject understood the intended meaning, and how satisfied they were with the expression itself. The naïve comments made by the subjects are further evidence of this, especially where they suggest paraphrasing to reduce the chances of miscomprehension. I have outlined areas that I propose require further research and study. These are chiefly the entire domain of negative metaphor and the cognitive effects of handedness. I am satisfied that the goals of this dissertation have been completed, and I look forward to both extensions and criticism on my work.
Bibliography


Appendix A

Instructions

Thank you for agreeing to take part in this experiment. Please remember that it is not an intelligence test, and there are no right or wrong answers. I am merely looking to have a record of only your own personal opinions on the sentences given.

Please answer the questions that follow the passages with regard to only the starred sentence or sentence fragment.

Sample Passage. . .
It was a lovely sunny day in July. **Anne and Barry decided to go to the shop.** They bought sweets and chocolate, but didn’t eat them until after their dinner.

The first question that is asked is a scale from 1 to 6 of how quickly you comprehended the starred sentence. The meaning of the starred part of the passage is immediately clear; therefore the sentence from the sample passage should be given the number one. The number you award each one depends on the perceived length of time it takes for you to understand the meaning of each sentence.

The second question asks “What exactly do you understand the starred sentence to mean?” This is again, a personal opinion, and I require only a few words as an answer. In the example given above, your answer would be something like “Anne and Barry made a decision to go to the shop”, as it only relates to the starred sentence, in this case the response “they didn’t eat their sweets and chocolate until after dinner” would not be relevant.

The third question asks “If you heard a foreign speaker of English uttering this sentence, would you find reason to correct them?” In the sample case, the sentence is of perfect English and so the response would be “no”.

The final question is specific to the text. For the above example I might ask “Where did Anne and Barry go?” The response would be “They went to the shop”. You are generally required to back your answer up with the reason. The reason that would be stated in this case is that we know they had decided to go to the shop, and then they bought sweets so the must indeed have gone to the shop.

The experiment should take no longer than 15 minutes and if you require further information or email me at the following address: sheehart@tcd.ie
Appendix B

Categorical Questions

Please take the time to answer a few questions that are necessary purely for categorical purposes. Anonymity is assured.

Are you male or female?

Into which age bracket do you fall. . .

Under 18
18 - 24
25 - 34
35 - 44
44 - 60
Over 60

Are you right- or left-handed?

Do you have any close friends or relatives who are left-handed?

Do you have a background in linguistics?

If so, please elaborate.
Appendix C

Version 1

Please note that the titles of the passages and the word ‘filler’ did not appear on the original studies, only here for ease of understanding.

Filler

It had been a great summer and nobody really wanted to leave Germany and all their new friends. **Dave, Lukas and Liam went back home to Boston, Poland and Dublin respectively.** Although they would probably not see each other again, they would never forget their friendship during the time they spent working together as camp counsellors.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where...

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Where did Dave go? How do you know?
**Samantha had come to a dead end regarding her final year project, nowhere left to turn, so she ended up backtracking.**

She rewrote the introductory chapter and continued from there, feeling very proud of herself.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. How was Samantha’s initial attempt at the project going?
Nicola’s mother did her laundry but the temperature was set too high and all Nicola’s clothes were returned to her two sizes too small. Now she would have to completely rethink the outfit she had planned to wear to the interview on the following Friday. Her mother was extremely apologetic, but Nicola couldn’t forgive her mistake.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. How did Nicola feel about what had happened to her clothes?
Many of the students had done no study and the exam was the next day. Mr. Finch knew that his class weren’t all in the same boat. He gave the test, as planned, the following day. Everyone, except a few foreign students, failed miserably.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where... 

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Had you expected any of the students to pass the exam? Why/why not?
She was trying to concentrate on the television, as her favourite show was on. She couldn’t follow what was happening at all, she had too much to think about and **her mind was wandering.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Why couldn’t she concentrate on the television?
Peter announced his engagement to his family during dinner one evening. **He had always been arrogant and self-centred, which is why his family were surprised that he had managed to find himself a girlfriend that he wanted to settle down with.** They offered him their congratulations and questioned him about the mysterious bride-to-be.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:  
2= Almost immediately:  
3= Somewhere in-between:  
4= A little time:  
5= A little bit more time:  
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. What was Peter’s family’s reaction to the news? Why?
Andrew completed the maths homework in about ten minutes; every single problem was correctly solved. His teacher thought him perhaps to be a genius, so she tested him further, discovering that his initial successful efforts were merely fluke. **He was not a computer.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where...

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. How intelligent is Andrew?
Helya couldn’t believe her luck when Sven, who she had loved since before she had even met Moe, who was her current husband, finally told her he felt the same way. She immediately filed for divorce and she and Sven lived happily ever after. Moe, on the other hand, would remain lonely and bitter until the end of his days.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where...

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Why would Moe be bitter?
"After I got caught drinking with Ben, my mother grounded me for a month. She refuses to let me out of her sight.** She is a prison guard.**"

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. What can be concluded about the mother’s occupation?
Barbie loved singing and she was in the junior county choir. She enjoyed practicing reaching high notes with her powerful voice each evening before supper. Barbie had already practiced for an hour on this particular evening but she wanted to sing some more. She knew what to do, **her homework was screaming out to be completed.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where...

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Do you think that Barbie continued singing? Why are you of this opinion?
It was a cold and frosty morning. No birds sang, no dogs barked. In fact, there was an eerie silence all over the small village. **Everybody stayed indoors that day, knowing that, unfortunately, the inevitable would soon be occurring.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where...

   1= Immediately:
   2= Almost immediately:
   3= Somewhere in-between:
   4= A little time:
   5= A little bit more time:
   6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Did anybody venture outdoors that day?
My brother, the rhino, charged around the house. This was the usual ritual on a Sunday afternoon before football training, when he tried to get all his gear together in our extraordinarily untidy home. Once again, my father ended up yelling at him, and my brother left the house in typically bad humour.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where...

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. What does the brother usually do before training?
Johnny -

Johnny finally told his girlfriend the truth about his family, all the secrets that he had kept from her were at last out in the open. He was a little worried that she might tell somebody else, but she assured him she wouldn’t, even though she knew that her lips weren’t sealed.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where...

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Will Johnny’s girlfriend pass on his secrets? Why are you of this opinion?
Carson went to the cinema a little bit earlier than planned, which gave him a chance to buy the tickets for them both. Usually, when Irena was with him, she’d insist on paying for her own. **He wanted to treat her today though.** **She had lost her part-time job the day before so he knew she couldn’t really afford it anyway.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Does Irena have a job?
Nora woke up in the morning, all excited because she was going on her school-tour today. They were going to the beach, and would be getting sailing lessons. She looked out the window anxiously to see what kind of weather they would have that day. **It was not a timid sun that shone in the sky.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Was Nora pleased with the weather that day? How do you know?
Sophie loved trying new things. She was on a walking tour of the town her mother grew up in, but had gotten separated from the rest of the group. Then she saw the group from where she was standing at the top of a steep cliff. **The cliff dared her to climb down to meet the others.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .
   1= Immediately:
   2= Almost immediately:
   3= Somewhere in-between:
   4= A little time:
   5= A little bit more time:
   6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Do you think Sophie climbed down the cliff?
Appendix D

Version 2

Sam -
Samantha had not come to a dead end regarding her final year project. She finished it much quicker than she had anticipated, feeling very proud of herself. **No backtracking had been necessary.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. How did Sam’s initial attempt at the project go?
Carson went to the cinema a little bit earlier than planned, which gave him a chance to buy the tickets for them both. Usually, when Irena was with him, she’d insist on paying for her own. **He wanted to treat her today though.** She had lost her part-time job the day before so he knew she couldn’t really afford it anyway.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Does Irena have a job?
No one had any study done, and the exam was the next day. **Mr. Finch knew that they were all in the same boat, so he postponed the exam until the following month.** The students were very relieved and vowed to prepare themselves for it this time. Mr. Finch hoped he had done the right thing.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Had you expected anybody to pass the exam? Why/why not?
She was trying to concentrate on the television, as her favourites how was on. She couldn’t follow what was happening at all. **Her mind wasn’t wandering:** her eyes were sore and tired.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where... 

1= Immediately: 
2= Almost immediately: 
3= Somewhere in-between: 
4= A little time: 
5= A little bit more time: 
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Why couldn’t she concentrate on the television?
It was a cold and frosty morning. No birds sang, no dogs barked. In fact, there was an eerie silence all over the small village. **Everybody stayed indoors that day, knowing that, unfortunately, the inevitable would soon be occurring.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .
   
   1= Immediately:  
   2= Almost immediately:  
   3= Somewhere in-between:  
   4= A little time:  
   5= A little bit more time:  
   6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Did anybody venture outdoors that day?
It had been a great summer and nobody really wanted to leave Germany and all their new friends. **Dave, Lukas and Liam went back home to Boston, Poland and Dublin respectively.** Although they would probably not see each other again, they would never forget their friendship during the time they spent working together as camp counsellors.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Where did Dave go? How do you know?
Andrew completed the maths homework in about ten minutes; every single problem was correctly solved. His teacher tried to convince him to take some university courses even though he was only fourteen years old. **His brain was a computer.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Was Andrew a robot or a genius?
Ben -

"After I got caught drinking with Ben, my mother grounded me for a month. Luckily she got sick of my complaining after a few days. **She isn’t a prison guard.**"

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. What can be concluded about the mother’s occupation?
Peter announced his engagement to his family during dinner one evening. **He had always been arrogant and self-centred, which is why his family were surprised that he had managed to find himself a girlfriend that he wanted to settle down with.** They offered him their congratulations and questioned him about the mysterious bride-to-be.

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. What was Peter’s family’s reaction to the news? Why?
Barbie loved singing and she was in the junior county choir. She enjoyed practicing reaching high notes with her powerful voice each evening before supper. Barbie had already practiced for an hour on this particular evening but she wanted to sing some more. She knew what to do, **her homework was screaming out to be completed.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. What do you think Barbie decided to do that evening?
Nora woke up in the morning, all excited because she was going on her school-tour today. They were going to the beach, and would be getting sailing lessons. She looked out the window anxiously to see what kind of weather they would have that day.** It was a timid sun that shone in the sky.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Do you think Nora was pleased with the weather that day?
Sophie loved trying new things. She was on a walking tour of the town her mother grew up in, but had gotten separated from the rest of the group. Then she saw the group from where she was standing at the top of a steep cliff. **The cliff wasn’t daring her to climb down to meet the others.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Do you think Sophie climbed down to meet the rest of the group?
Ruby -

Ruby had been working hard all week in a busy shopping centre selling oven mitts to shoppers. She finally had a few days off work. She went to her country house to get away from city life. **For the next few days, she was an island.**

1. Did you immediately understand what the starred sentence meant or did it take a little time? Please rate your answer from 1 to 6, where . . .

1= Immediately:
2= Almost immediately:
3= Somewhere in-between:
4= A little time:
5= A little bit more time:
6= Still don’t understand it:

2. What do you understand the starred sentence (or part of sentence) to mean?

3. If you heard a foreign speaker of English uttering the starred sentence, would you find reason to correct them?

4. Did Ruby go somewhere exotic? Why are you of this opinion?
## Appendix E

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Table 1: Perceived Times taken to Understand each Metaphor - Version 1
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Table 4: Suggested Metaphor Corrections (0=No;1=Yes) Version 2