Lebanese American University

Language and thought: A coexisting relationship

By

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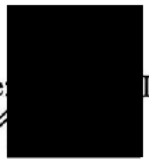
Signature:  Date: 27/03/12

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To the precious soul of my beloved father

Language and thought: A coexisting relationship

Aleen El Jurdi

Abstract

The relationship between language and thought has been a major area of discussion and debate for many philosophers, linguists, and researchers. While some considered that these two variables are separate faculties, others argued that they share many links and relationships. The study conducted in this research paper aimed at investigating whether there exists an influential relationship between language and thought. The participants were first year university students who viewed magazine images in the presence and absence of linguistic interference. Content analysis was done on the participants' responses to an open-ended questionnaire which questioned the interpretation of the images. The findings of the study suggest that language has an evident impact on thought and cognition.

Keywords: Language, Communication, Linguistic, Thought, Cognition.

TABLE OF CONTENTS

Chapter **Page**

I. Introduction 1-6

1.1-Overview 1

1.2-Rationale of the study 1

1.3-Research context 2

1.4-Definition of terms 3

1.5-Division of paper 5

II. Literature Review 7-27

2.1 -The purpose of language 7

2.2 -The evolution of language 8

1.3 -Universal Grammar and Simple Nativism 10

2.4 -The Language-Thought Doctrine 13

2.5 -An overview on researches and studies 15

2.6 -Bloom's categorization of claims against the Whorfian hypothesis 17

2.7 -Alternative frameworks 18

2.8 -Political correctness and euphemisms: An indication to a language-thought relationship 20

2.9 -Usage of language to manipulate thought 21

III. Sampling and methodology 28-37

3.1 -Overview 28

3.2 -Research design and methodology 28
3.3 –Instrumentation and Sampling 31
3.4 –Procedures 33
3.5 –Ethics in research 34
3.6 –Data analysis 35

IV. Findings 38-54

4.1 –Overview 38
4.2 –Findings 39
4.2.1 –Question #1 39
4.2.2 –Question #2 41
4.2.3 –Question #3 43
4.2.4 –Question #4 44
4.3 –Analysis and discussion 46
4.3.1 Image (a): Experimental vs. Control Group 46
4.3.2 Image (b): Experimental vs. Control group 50

V. Conclusion 55-57

5.1 –Limitations and implications for future research 56

VI. References 58-65

VI. Appendices 66-69

Appendix A 66

Appendix B 67

Appendix C 68

LIST OF TABLES

Table	Table Title	Page
Table 4.1	Participants' interpretation of image (a) in both groups.	41
Table 4.2	Participants' interpretation of image (b) in both groups.	42
Table 4.3	Participants' responses to question 3 in both groups.	44

CHAPTER ONE

INTRODUCTION

1.1 Overview

The debate on language and thought has emerged in the past and continued to be a controversial area of discussion for philosophers, linguists, and researchers. While some thinkers divided these two variables apart, others tried to indicate inherent links, relations, and ties between them. Despite the different interpretations given, the debate over these two variables has remained controversial and open to explanations and evaluations.

The existing and never-ending debate led some researchers to conduct studies on the issue. However, empirical research in this field was neither sufficient nor elaborate (Lucy, 1997). Some regard that the reason behind this goes back to the issue of language and thought itself, which can in many aspects oppose the inherent assumptions of empirical schools in the fields of philosophy, psychology, and linguistics (Bloom, 1981). Regardless of what the reason might be, the lack of empirical research has given rise to questions on the validity of this issue (Lucy, 1997).

1.2 Rationale of the study

In the following project, the debate over language and thought will be discussed in an attempt to clarify inherent concepts and issues that these two variables might share. The purpose of the following study is to explore any existing relationship between language and thought and examine whether one influences the other. It is assumed that the study conducted in this research paper will help in clarifying the nature of relationship between the two

variables, language and thought, and will add to the empirical research studies done on the issue.

The importance of this study lies in the fact that it tackles a long-existing debate on whether there exists an influential relationship between language and thought. Prior to the emergence of Benjamin Whorf's hypothesis, that language affects thought, the relationship between language and thought has always been a major subject of debate for multiple researchers and experts. This controversy remains until today where different views continue to address the issue.

The major issue tackled by this study is whether language influences thought and the way people perceive reality. The two research questions being tested are:

1. Does language influence people's thinking about issues?
2. Does language influence the way people perceive a certain reality?

1.3 Research context

The conducted study took place in a private university in Lebanon where 42 students were asked to respond to a questionnaire that tests the possible impact of language on thought or cognition. The participants were chosen to be of a similar educational level, and they were of the same age level group. Prior to their response to the given questionnaire, the participants were exposed to two versions of two magazine covers which they had to analyze. The findings of the study indicate a clear relationship between the two studied variables and expose inherent ties between them. These findings will be thoroughly discussed and analyzed in a later section of this paper.

1.4 Definition of terms

Definitions of language involve multiple explanations that describe language as a sound system used for communication, a specific system used by a certain group of people or a nation, and a means of expression (Weber, 2002). Language, a tool used by human beings for communication and expression, develops as the individual grows up (Gage & Berliner, 1998). According to Emerson, language is a "fossil poetry" in the sense that it is a remnant of communications (Urban, 2002, p. 233 & Murray, 1956, p. 204). It is also, as described by Kirby, Cornish, and Smith (2008), a transmitter of culture. Language originates and evolves from certain communicative interactions that occur between individuals in different settings (Urban, 2002) and gets transmitted through time and cultures (Kirby et al., 2008).

In addition, language is regarded as an "extraordinary tool" which differentiates humans from animals and other species (Gage & Berliner, 1998, p. 118). This faculty, the faculty of language, is a key criterion that is solely possessed by human beings and is developed at early stages of age and despite social and physical handicaps (Chomsky, 1980 & Pinker, 1994). In fact, language does not only differentiate humans from other species, but also differs among its very users. In her article *Language and Borders*, Bonnie Urciuoli (1995) explains that language differs between people in response to certain variables such as ethnicity, race, or nationality. Individuals that share a single language come to develop a sense of belonging among each other forming a group that has its shared acts and discourse (Urciuoli, 1995).

Furthermore, language has been considered as the "most universal and primary symbolic form" in humans' cognition (LI, Huang, Xiaolu, & Jiayan, 2007). By definition, cognition is regarded as an act of knowing or attaining knowledge (Weber, 2002). It involves mental processes of thinking, learning, understanding, and remembering (Merriam-Webster,

2012). According to cognitive science, thinking mostly happens unconsciously where cognitive capabilities such as learning, remembering, and understanding happen in an implicit manner (LI et al., 2007).

Moreover, a cognitive ability is an ability that permits individuals to understand issues, solve problems, and learn from experiences (Gage & Berliner, 1998). According to Estes (1982, p. 171), cognitive ability is an "adaptive behavior" of individuals operated by cognitive operations and characterized by an ability of solving problems. Moreover, the faculty of cognition also involves the ability of dealing with abstractions such as ideas, symbols, and concepts (Gage &Berliner, 1998; Snyderman & Rothman, 1987).

In their article, LI et al. (2007) discussed the different levels of cognitive ability and explained how such ability develops from one level to another. Such ability starts with a primitive level where thinking is mostly translated through behavior, and it can be recognized in animals and humans (LI et al., 2007). This level develops into a primary stage where cognition occurs through imagination but is still translated through bodily movements to a large extent (LI et al., 2007). This stage advances to reach the highest level of development where language has a remarkable interference (LI et al., 2007). This level is called verbal-thinking and it involves the ability to perform logical operations (LI et al., 2007).

Understanding cognition has passed in several evolutionary stages starting from the 1960s following the neglect of *Behaviorist* perspectives, which denied the existence of an internal mental state (LI et al., 2007). This evolution started with *Symbolism* which related cognition to representation and suggested that cognitive processes and operations are, in principle, a computation of given symbolic representations (Tattersall, 2008; LI et al., 2007). Following this hypothesis, the *Dynamical Systems Theory* (DST) emerged to oppose the *Symbolism* claims, and it regarded thought as a systematic incident which is dynamic and gets

influenced by external interactions (Eliasmith, 1996; LI et al., 2007). According to this view, cognition is a dynamical process that results from interactions between the individual and his/her environment (Eliasmith, 1996; LI et al., 2007).

The above interpretations on language and cognition help in understanding the meaning of these two words and explaining their usage. They also make the study of any existing link between language and cognition become more valid and comprehensible. According to Chomsky, to study language is basically to study a component of human nature exhibited in the mind (Stark, 1998). It is important to note that in the following paper, the words "cognition" and "thought" will be used interchangeably.

1.6 Division of paper

The following paper consists of five chapters that build on one another. While this chapter serves as an introduction to the paper, the remaining chapters delve into the studied issue and explain its aspects. In chapter two, a detailed body of literature on the issue will be reviewed and explained. In this chapter, key researches, theories, and views will be documented in an attempt to provide conclusive contextual information on the studied issue.

Following this detailed review of literature, the study conducted in this paper will be presented in chapter three. In this chapter, the sampling criteria and process will be described. Moreover, explanation on the study's methodology and procedural details will be discussed.

In chapter four, the results and findings of the study will be explained, analyzed, and evaluated. These findings will be further compared to theories, hypotheses, and other studies reviewed in chapter two.

Finally, the limitations of the study as well as implications for future research will be presented in the last chapter of this paper. This chapter will also include a conclusion that sums up the major outcomes of this paper.

The general overview on the topic, presented in this chapter, was offered in order to provide a background context on the issue being tackled and researched. Having introduced the given topic, any discussion provided will be considered valid. In the coming chapter, a detailed body of literature will be reviewed. Such review of literature will provide the reader with a full insight about different theories, hypotheses, views, and studies that exist on the topic.

CHAPTER TWO

LITERATURE REVIEW

Relevant literature on the area of language and thought will be reviewed in this chapter. Key theories, hypotheses, researches, and studies will be presented and explained in an attempt to provide an appropriate contextual background on the topic and highlight the major contributions done by multiple philosophers and researchers.

This chapter will include an overview on language, its evolution, theories related to it as well as major doctrines and hypotheses done on the relationship between language and thought. Moreover, a number of studies on the subject will be reviewed and explained. The final part of this chapter will discuss different attempts of using language as a tool of manipulation and how such attempts might pinpoint an influential link between language and thought.

2.1 The purpose of language

It has been said that the way a person uses language determines partly who he/she is (Litosseliti, 2006). In their daily lives, people tend to depend on language when performing complex as well as simple issues, such as counting or tracking direction (Boroditsky, 2011). Hence, it can be considered that a person's view of reality is not only affected by the language he/she speaks but also shaped by it (Litosseliti, 2006). Departing from this conception, it becomes crucial to discuss the power that language has and its role in people's lives.

In their book, Ogden and Richards (2001, p. 44) describe words as having the "most conservative force" in people's lives. The authors emphasize the power and crucial role that words play in humans' lives and note that one cannot escape his/her own structuring of language (Ogden & Richards, 2001).

As noted by philosophers and linguists, language traditionally has had two primary purposes which are communication and representation (Joseph, 2004). While the communicative purpose of language describes human beings' interactions, the representative purpose emphasizes the existing link between language and reality (Weber, 2002; Joseph, 2004). It explains the way people use language as a representation of the world they live in and how they attempt to categorize concepts and objects accordingly. Yet, these two basic purposes, in many times, overlap and come together. According to Wittgenstein (Joseph, 2004), the representative role of language cannot be isolated from the communicative one. When people communicate with each other, they become able to conceptualize world objects and events in myriad ways (Gentner & Goldin-Meadow, 2003).

2.2 The evolution of language

The importance of language has been a core point of discussion to many authors. Martin Nowak (2000) calls language the "most important evolutionary invention" in life. The author does not merely talk about the function of human language, but also discusses how it evolved from a basic system of communication for animals (Nowak, 2000). However, this system of communication for animals lacks the language faculty, which is a property for human beings, and it distinguishes them from other species (LI et al., 2007).

Some authors divided language and communication into levels that might be shared and different among humans and animals (LI et al., 2007). According to such divisions,

animals and humans usually share the ability to express and signal a certain feeling or emotion through varied means of expressions (LI et al., 2007). Nevertheless, only humans have the exclusive ability to describe and narrate as well as the ability to argue and think critically (Chomsky, 1980; LI et al., 2007).

Nowak and other authors have explained the evolution of language, its stages, and development. Around one word is learnt in 90 minutes during the first 16 years of life for an individual; therefore, by the age of six, a child would know a number of 13000 words (Nagy & Anderson, 1984; Miller, 1991; Pinker, 1994). Furthermore, words are made up of chains of phonemes, or the smallest units of sound, and are learned to be used by the brain to build up sentences (Nowak, 2000). "Mental grammar," is a name given to the brain's programme that enables it to apply this function of using words to make a diverse amount of sentences (Jackendoff, 1997). According to Pinker (1994), words are stored in the form of mental concepts known as "mentalese." The knowledge of language requires the knowledge of translating these mental concepts into words as well as transforming words into relevant thoughts (Pinker, 1994).

Complexity occurs in the act of speaking as it requires very accurate and precise performance of the vocal tract (Miller, 1981; Nowak, 2000). As Nowak (2000, p. 1615) calls it, speech perception constitutes "another biological miracle of […] language faculty." In order for a sound to be perceived and understood clearly, it should be made up of several phonemes which the brain will process (Liberman et al., 1967; Cole & Jakimik, 1980). In addition, spoken language occurs as a product of a learning process called iterated learning (Kirby, Cornish, & Smith, 2008). This process regards learning as happening through observation (Kirby et al., 2008). In other words, people learn certain behaviour, in this case

speaking, through observing it in other individuals who have also acquired this behaviour in the same manner (Kirby et al., 2008).

2.3 Universal Grammar and Simple Nativism

Around 6000 different languages exist in the world (Nowak, 2000). While it has been said that there is no simple and basic human language, Chomsky argued that all languages share a similar underlying "universal grammar" which is essentially innate in humans (Nowak, 2000; Hayes, 1970). This doctrine of language as being innate in humans states that a language's syntax or grammar is basically universal (Hayes, 1970) and that the semantics or meaning is generated by an intrinsic "language of thought" (Fodor, 1975). In other words, individuals come to possess and maintain an innate and unconscious system of language knowledge about meaning, structure, order, and sound of words and sentences (Stark, 1998).

In this respect, grammar or syntax can be defined as being a series of rules that differentiate syntactic sentences from ungrammatical terms of words as well as identifies grammatical links among the varied parts of a sentence (Hayes, 1970). In consequence, the *Universal Grammar theory* (UG) focuses on the internal construction of the mind and considers that there exist universal principles which apply to every language in the world (Stark, 1998; Cook & Newson, 2007). UG further divides the mind into distinct components or modules where each is responsible for a separate mental activity or aspect (Cook & Newson, 2007). Among these modules lies the "faculty of language," which is exclusively concerned with the knowledge of language (Cook & Newson, 2007). Such a faculty is the sole essence of the UG theory and which, according to Chomsky is a shared possession among humans and a separate type of knowledge that each individual has (Stark, 1998).

In their book *Language in Mind*, Gentner and Goldin-Meadow (2003, p. 25) call this view "Simple Nativism," a claim that the major language properties are generated by innate mental apparatus. The authors explain that *Simple Nativism* considers that linguistic categorizations are exact projections of universal notions that are instinctive to species (Gentner & Goldin-Meadow, 2003).

A counter view to the doctrine of *Simple Nativism* argues that languages differ in the grammatical structure as well as the range of lexical or vocabulary knowledge available to a speaker (Gentner & Goldin-Meadow, 2003). According to this view, speakers of different grammars, and hence languages, come to hold distinct interpretations and evaluations of possibly similar observations (Slobin, 1979). As a result, speakers would talk about a certain event through making lexical choices relevant to the languages they speak (Clark, 1997; Schober, 1998). Proponents of this view argue that each community has its respective history that, in turn, has influenced both the grammar and lexicon over time (Gentner & Goldin-Meadow, 2003). Consequently, language and its content become products of culture and, hence, are vulnerable to cultural differences (Kirby et al., 2008; Gentner & Goldin-Meadow, 2003).

In the article *Language and Borders*, Bonnie Urciuoli (1995) discusses this idea explaining that the differences in languages represent the differences between people living in different nations and having varied life styles and sense of belonging to their respective nations. Furthermore, Kirby et al. (2008) regards language as a tool for cultural transmission. The authors discuss that language does not only convey the characteristics of a certain culture, but is in itself transmitted through cultures (Kirby et al., 2008).

Moreover, opponents of the UG theory regard that since lexical concepts are not universal or common to all languages, not all languages seem to represent ideas in a similar

manner (Branston & Stafford, 1999; Gentner & Goldin-Meadow, 2003). In fact, just as linguistic structures vary between regions of the world, so are concepts and ideas. A very famous example that illustrates this idea is that of snow. English speakers mostly use the word *snow* to describe snowy weather (Branston & Stafford, 1999). On the other hand, Inuit speakers have multiple names for detailed distinctions of the varied types of snow (Branston & Stafford, 1999). This difference in describing the incident of snowy weather goes back to the original difference that lies between the English and the Inuit language and culture. While Inuit language has multiple lexical terms describing snow, English language has a reduced lexical knowledge in this instance. As Gentner and Goldin-Meadow (2003) state, speakers of distinct languages happen to also think differently. In fact, the authors further argue that a good deal of the complex concepts composed in the brain is actually "inherited from the language we happen to speak," (Gentner & Goldin-Meadow, 2003, p. 36).

The example of snow serves to illustrate a major characteristic of semiology, the study and analysis of signs or the social construction of meaning which are produced by various languages and signs (Burn & Parker, 2003; Branston & Stafford, 1999). In this respect, it is important to note that signs, specifically visuals signs, can be of a high polysemic nature or the ability to have multiple varied meanings (Ravin & Leacock, 2000). A major way to reduce the ambiguity of visual signs is through the use of language, where it is employed to indicate the intended meaning of a certain image, and hence guide the viewer to perceive this image in a fixed manner (Branston & Stafford, 1999).

The instance of snow further emphasizes another key characteristic in semiology which is that individuals' perception of the world and reality is actually shaped and constructed by the language and signs they tend to use (Burn & Parker, 2003). In this respect, language does not only represent what people perceive but actually determines the way they

sense things (Branston & Stafford, 1999). According to semiology, people continuously construct language to generate meanings relevant to their respective cultures (Branston & Stafford, 1999).

2.4 The Language-Thought Doctrine

Other counter arguments to the view of Simple Nativism drive the discussion to another field of study concerned in the nature of linguistic variation and how language and cognition might interrelate. In his book, *The Linguistic Shaping of Thought*, Alfred Bloom (1981) starts his introductory chapter by questions on the difference in languages between China and the United States and whether such differences might, consequently, lead to variations in thought among Chinese and Americans.

Bloom (1981) discusses and explains the impact of language on thought and addresses the relationship between these two variables. The language-thought doctrine had initially started with the American philosopher Benjamin Whorf, who argued that language can actually impact thought (Gentner & Goldin-Meadow, 2003). Whorf regarded that language, in its grammar and vocabulary content, influences the way a person might perceive him/herself and reality (Coffey, 1984). Hence, a person's view of reality is highly influenced and even determined by his/her knowledge of language (Coffey, 1984).

Despite the fact that the language-thought hypothesis, also known as the *Whorfian hypothesis*, has often been associated with the name of Benjamin Whorf, back in 1836 Humboldt had described language as a decisive organ of thought (Gumperz & Levinson, 1996a; Lucy, 1996). Humboldt (1988) argued that language and thought are inseparable. In the 1930s, the two anthropological linguists Benjamin Whorf and Edward Sapir had argued for a relationship between language and thought where the first influences thinking and

affects it (Lucy, 1997; Boroditsky, 2011). Perhaps the two linguists' ideas can be comprehended through Sapir's own writing on the issue that

> *It is quite an illusion to imagine that one adjusts to reality essentially without the use of language and that language is merely an incidental means of solving specific problems of communication or reflection. The fact of the matter is that the "real world" is to a large extent unconsciously built up on the language habits of the group… We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of manipulation. Edward Sapir (Bowie, Michaels, & Solomon, 1988).*

The Sapir-Whorf hypothesis has been regarded as a developmental designation of the linguistic relativity hypothesis, a hypothesis originated in the past and which claims that the language one speaks influences conceptions of reality (Lucy, 1997). The notion behind the linguistic relativity hypothesis explains how speaking a particular language may affect thinking (Lucy, 1997).

Several proposals have long been grouped under the linguistic relativity hypothesis; however, they all share two relations. The first is that language represents an understanding of reality. Secondly, language is able to shape thought about such reality (Lucy, 1997). As a result, varied perceptions of reality conveyed through languages yield definite effects on thought (Hill & Mannheim, 1992).

In turn, the Sapir-Whorf hypothesis stands on three key assumptions (Gentner & Goldin-Meadow, 2003). Firstly, languages differ in their semantic divisions. Secondly, an individual's language structure influences the individual's own perception of reality. The last assumption underlying this hypothesis comes as a consequence for the two primary assumptions and states that speakers of distinct languages come to perceive the world in a different manner.

According to the stated hypothesis, grammatical structures of a language influence the speaker's view of reality and the world (Gentner & Golden-Meadow, 2003). In this respect, language necessarily evokes thoughts and ideas instead of merely representing them (Slobin, 1979). To Whorf, particular grammatical patterns in language may induce corresponding ideas (Gentner & Golden-Meadow, 2003).

2.5 An overview on researches and studies

The language-cognition relationship has featured a field of on-going investigations where each explained and elaborated on the inherent link between these two variables. In the 1970s, works by Talmy, Bowerman, Langacker, and other researchers of language indicated how languages differ semantically across the world and how such differences divide the world (Gentner & Golden-Meadow, 2003). Moreover, other investigations were done by researchers such as Vygotsky (1962), Agnoli and Hunt (1991), and others who discussed the significance of language on cognitive ability and its development.

Furthermore, a considerable amount of research on the relationship between language and thought has relied on studying color (Brown & Lenneberg, 1954; Brown, 1976; Heider, 1972). Color research was primarily influenced by Whorf and has continued until recent times (Lucy & Schweder, 1979). In such field of research, color was regarded as a stimulus for testing the hypothesis of whether language influences thought (Lucy & Schweder, 1979).

The Whorfian hypothesis was widely welcomed in the 1950s and 1960s with the support of experimental data offered by Brown and Lenneberg (1954). The two authors conducted studies using color as a stimulus to test the Whorfian hypothesis. Their studies revealed a positive relation between the ability to code English terms of color and people's capability of retaining and recognizing a certain color from a selection (Brown & Lenneberg,

1954). In these studies, it was noticed that terms of color influenced individuals' ways of dividing the color spectrum, and hence the way they perceive color (Brown & Lenneberg, 1954).

In 1956, Lenneberg and Roberts conducted another color study on English and Zuni speakers. The authors found that the fact that English speakers had more specific terms for coding colors, such as "orange" and "yellow," enabled them to better memorize colors than Zuni speakers who had no similar lexical patterns in the language they spoke (Lenneberg & Roberts, 1956).

Moreover, in 1981, Lucy conducted similar research and had similar findings on English versus Spanish versus Yucatec speakers. Similar research on color continued with other researchers as well (Davidoff, Davies, & Roberson, 1999; Kay & Kempton, 1984).

On the other hand, a study by Rosch in New Guinea on Dani people showed that despite having only two central color terms (light and dark) opposed to eleven terms in English, the Dani participants performed on specified cognitive tasks as if their color terms were similar to the English color coding system (Heider, 1972). The key idea behind the findings of this study was that the biology of the human color perception is what actually determines human's awareness of color and not the language learnt (Heider, 1972).

A richer possibility for having a link between language and cognitive structure has been interpreted in various studies on space (Gentner & Golden-Meadow, 2003). Since linguistic structures denoting spatial relations vary across cultures, it had been speculated that the corresponding cognitive structures vary accordingly (Bowerman, 1996; Brown, 1994; Casad & Langacker, 1985; Talmy, 1985).

A study done by Gentner and Golden-Meadow (2003) focused on the linguistic differences found in the spatial field. The purpose of the study was to understand such linguistic differences and explore their relationship with non-linguistic cognition (Gentner & Golden-Meadow, 2003). The study's results showed that preferred frames or systems of reference found in language affect the mental life of individuals (Gentner & Golden-Meadow, 2003). These frames influence the mental coding of the spatial relations as well as the way through which individuals think about space (Gentner & Golden-Meadow, 2003). Gentner and Golden-Meadow (2003) consider these results as being convincing evidence that linguistic codes carry an influence on cognition.

Moreover, other research studies on the issue showed that speakers of languages that involve absolute directions, such as North, South, East, and West, are better in keeping track of their directions than speakers of languages that rely on different ways to denote direction such as left and right (Boroditsky, 2011).

2.6 Bloom's categorization of claims against the Whorfian hypothesis

Other responses on the initial Whorfian hypothesis of language and thought continued to come to light in the 1970s (Boroditsky, 2011). In fact, following the findings of Rosch was a period characterized by extreme scepticism on the language-thought hypothesis (Clark & Clark, 1977; Devitt & Sterelny, 1987; Pinker, 1994).

In his book, Alfred Bloom (1981) described such scepticism as an act of overreaction to Whorf's hypothesis. Bloom (1981) represented a number of frameworks that opposed the stated hypothesis and explained the inherent causes that led some authors and researchers to overreact to Whorf's hypothesis. Bloom categorized the claims around Whorf's hypothesis into three major categories. Under the first category lie those who understood from Whorf's

hypothesis that the way women and men speak influences and determines their thinking (Bloom, 1981). Under the second category are those who linked Whorf's ideas to the native language that one speaks, and explained that this language actually determines the individual's mode of thinking (Bloom, 1981). The last category, identified by Bloom (1981), gathers those who explained Whorf's hypothesis as indicating that differences in languages yield to difference in thought among speakers of these languages. Bloom explains that these three categories of interpreting Whorf's work involved authors who discouraged Whorf's ideas and rejected them. According to him, the reactions were "extreme," (Bloom, 1981, p. 3) in the sense that people overreacted to the hypothesis instead of delving into it and examining its key points closely.

2.7 Alternative frameworks

Many frameworks opposed the language-thought hypothesis, each having its own explanation and justification. Some showed a total rejection to the possible existence of a relationship between language and thought such as the *Behaviorist Psychology* framework (Mueller, 2007). According to it, thought does not exist and, hence, any discussion about a link between language and thought would seem irrelevant (Bloom, 1981). To this view, the individual's behavior is the only concern; therefore, it is possible to study any relationship between linguistic categories and human behavior but not thought (Mueller, 2007; Bloom, 1981).

Moreover, in writing on the subject, Bloom (1981) discusses the *Philosophy of Language Tradition* which involves the views of several authors. According to Gotltob Frege (1952), language is similar to the telescope which enables its holder to view objects after their respective images get projected on the telescope's internal mirror. Though these images may

change as a telescope is shifted from one place to another, the initial objects to which they refer to remain constant.

Through this metaphorical analogy, Frege (1952) poses the question to whether language, with its variety of meanings and perceptions of reality, might or might not affect thought. In his analogy, Frege (1952) shed light on a relation between language and reality or the external world and had initiated a 75-year long tradition of philosophy focusing on such relation (Bloom, 1981).

In 1905, Bertrand Russell (Bloom, 1981) talked about linguistic expressions and their relation with external world. Russell (1905) explains that, for instance, when some sentences state that something does not exist; this thing actually comes into existence just through referring to it. The author gives the example of the sentence "unicorns do not exist" and states that referring to them is a mere presupposition that they exist (Bloom, 1981).

Furthermore, the relation between language and the external world remained a concern for many authors. *Logical Positivists* tried to delve into the issue through attempting to demonstrate that each English sentence should have its equivalent form in reality (Bloom, 1981). This view was largely undermined by Quine (1960) who argued that it is nearly impossible to define words and translate them into auditory, visual, or tangible terms.

On the other hand, in his *Philosophical Investigations*, Wittgenstein (1953) argued that the meaning of linguistic expressions is only valid through studying their usage. In other words, speakers tend to manipulate language tools in order to achieve certain ends. Hence, they employ language to reach these ends. In this sense, meaning is not in language but in its usage and it changes as the context of speech varies (Wittgenstein, 1953).

Furthermore, Bloom (1981) in his book also talks about a paradigm that has not only distinguished between thought and behaviour but also has drawn a link between thought and language. Referred to by Bloom (1981) as *Cognitive Structuralism*, this paradigm is rooted in Noam Chomsky and Jean Piaget's works. Cognitive Structuralism has, firstly, noted a clear distinction between thought and behavior where it has explained that an individual represents information, processes them, and plans actions accordingly (Roberts, 1986). This paradigm secondly notes that thought develops through interactions with input from one's environment; and, finally, that this thought is distinct from language, and it develops at early stages of life prior to acquiring language but which later on may be influenced by language (Bloom, 1981).

2.8 Political correctness and euphemisms: An indication to a language-thought relationship

A considerable attempt for discussing the language-thought relationship was done by Gentner and Goldin-Meadow (2003) in their book. The authors referred to *Political Correctness*, a phenomenon which requires the replacement of certain words by others that would prevent listeners from making adverse inferences but still understand the meaning of what is being said (Morris, 2001). The purpose behind politically correct speech is to avoid unpleasant words or terms that might trigger any negative reactions in listeners (Pulley, 1994).

The major idea discussed by the authors regarding political correctness can perhaps be conveyed through the following question: is political correctness a clear indication on a relationship between language and thought? When words such as chairman, old, and deaf be replaced worldwide by chair, senior citizen, and hearing impaired, a direct link between language and thought gets exposed (Gentner & Goldin-Meadow, 2003). In fact, the very

phenomenon of political correctness implies that thought is actually affected by language; otherwise, how can the increasing attempts calling for politically correct speech in fields related to gender bias, special needs, and others be explained?

Another phenomenon related to language modification for the sake of influencing thought is observed in the use of euphemisms. Often defined as mild and inoffensive words used to replace painful and offensive expressions, euphemisms are evident signs of people's inner anxieties, shames, and fears (Pulley, 1994; Rawson, 1997). Euphemisms can be either positive or negative but would, in any case, conceal certain facts and modify expressions to reach a certain end (Rawson, 1997). While positive euphemisms are used to make the euphemized item sound more important, negative euphemisms are often used to diminish meaning (Rawson, 1997).

What is important to note about euphemisms is that many of them are constructed unconsciously, the thing that makes them unnoticeable for many people who, in turn, perceive them as being common sense (Rawson, 1997). For instance, the phrase *collateral damage* is a euphemism replacing the original phrase *civilian damage* (Rawson, 1997). Such euphemism is peculiarly used in times of war in an attempt to not only conceal the fact of killing civilians, and hence understating the original action, but also modifying and improving the real meaning which might intrigue counter-reactions from listeners. As a result, such euphemism reduces the risk of conflicting with the initial meaning, though it might conceal the real meaning completely.

2.9 Usage of language to manipulate thought

Despite the fact that the debate over the language-thought relationship is an endless one, attempts of using language to influence, and in many aspects, manipulate thought cannot

be ignored. In the article *Language: A Transformative Key*, Carolie Coffey (1984) sheds light on the usage of language as a tool to construct reality. Coffey (1984) argues that language seems to have a power of creating as well as transforming social reality. To support this view, Coffey (1984) gives the example of sexist language and feminists attempts to show that English language conveys a view of a patriarchal world.

Furthermore, two of the most evident fields that have featured attempts of using language as a tool of manipulation are the field of media and that of politics. The rift between these two fields is often obscure as they both interrelate. Politicians and other public figures need to have access to mass media in order to communicate their messages to the public and, hence, reproduce and preserve their powers (Dijk, 2006). The mainstream media is often used to promote certain ideas or ideologies that would influence public opinion (Kellner, 1992). Such performance is mostly noticed in politics at times of conflict and war where multiple strategies are employed to illuminate certain ideologies against others.

A very important strategy is the use of language to reflect and translate certain views and communicate them with the audience. In his book *The Persian Gulf TV War*, Douglas Kellner (1992) argues that just as wars destroy humans, so they do to language where it is employed to mobilize the support for a certain position against the other. This attempt is called by Kellner the "militarization of language," (1992, p. 238).

Kellner talks about a phenomenon similar to euphemisms which he calls "Warspeak," the production of language that sanitizes unpleasant events and realities (1992, p. 238). In his novel *1984*, George Orwell describes a similar issue called *Doublespeak*, a term that implies the usage of language to modify the bad and make it seem good. One of the examples offered by Kellner (1992) that would help illustrate these phenomena is the code name of the 1990 Gulf war which occurred between the United States and Iraq. The name of this war was

Operation Desert Storm, a code name employed by the US media (Seymour & Goodman, 1991). Following the same code naming strategy used for Panama invasion in 1989 and which had been referred to as *Operation Just Cause*, Kellner (1992) notes the prominent usage of the word "operation" as a replacement for the word "war." Kellner (1992) explains that the word "operation" reflects a scientific discourse connoting to the "surgical removing of malignant matter," and which serves to make the conflict sound very accurate, inevitable, and essential. Moreover, the usage of "Desert Storm" added the idea that the war had occurred naturally just like any weather storm (Kellner, 1992). Other words and phrases of medical discourse, such as "surgical strikes" connoting bombing, were continuously used in the reporting on war in an attempt to influence public's understanding of incidents (Kellner, 1992).

Political language, whether communicated through media or other political events, often holds a purpose of persuasion (Cobb & Kuklinski, 1997). Orwell (2005), in *Why I Write*, describes political discourse as being "designed to make lies sound truthful and murder respectable, and to give an appearance of solidity to pure wind." Orwell's description does not only note the use of language in politics, but also deviates the discussion towards the nature of such usage.

In her article, *The power and abuse of language in politics*, Jennie Bev (2008) regards language as a powerful means used effectively by politicians for different purposes grouped together under the notion of manipulation. According to the author, such manipulative usage of language is reflected through brainwashing (Bev, 2008). Writing on the same topic, Dijk (2006) argues that manipulation involves "abuse" of power and defines it as being a "form of social power abuse, cognitive mind control and discursive interaction" (p. 359).

Aside from noting a social aspect, Dijk (2006) in his definition, draws a link between manipulative discourse and cognition. According to him, manipulation involves exercising an illegitimate influence through discourse, consequently, affecting and controlling the mind of the recipient. This discourse-based manipulation is done through shaping recipients' beliefs and ideologies leading to controlling their respective actions (Dijk, 2006).

In this respect, the link between language and thought implies a relationship of influence where language has been continuously used as a tool to affect thought and direct one's cognitive skills. An example illustrating this premise is given by Bev (2008). Despite its simplicity, the example is sufficient to translate the concept. The literal translation of the Indonesian word *Pemerintah,* meaning *government*, is "one who gives orders." Bev (2008) argues that such a word is in itself a fallacy as the concept behind it is totally opposite to the concept of representing people in a government.

Some words and discourse structures prove to be more powerful in the process of influencing thought (Dijk, 2006). Con arguments, or arguments that are against a certain party of figure, are said to influence more than positive arguments (Cobb & Kuklinski, 1997). Other structures involve the usage of positive representation of one's self versus the negative representation of the other (Dijk, 2006; Powers, 2009). Such strategy is applied to many political discourses in times of war where the "good" acts of a country are highlighted against the "bad" acts of the other country (Powers, 2009). In this respect, Dijk (2006) gives the example of the September 11 attacks which announced an anti-Arab discourse stressing on the evilness of the terrorists versus principles of democracy and freedom that characterize the United States.

Furthermore, Dijk (2006) analysed a speech by the Prime Minister Tony Blair about legitimizing his government's participation with the United States in the war against Iraq in

2003. Dijk (2008) noted the use of different discourse structures, such as the use of hyperboles, emotional discourse, ideological categorization, and others that gave Blair's speech a manipulative nature. Moreover, in writing on political narratives, Shaul Shenhav (2006) argues that political narratives rely heavily on patterns of narrative which in turn have the ability to alter thinking and shape it.

The employment of language as a tool to influence thought is not restricted to media or politics but may extend to other fields of education, law (Boroditsky, 2011), and religion (Pernot, 2006). Religious figures continuously use linguistic resources that help them establish and maintain power (Taiwo, 2007).

In his article on religion and language, Pernot (2006) argues that the two variables are "intimately linked," (p. 235). Whether the religious discourse involved preaching, talking about the divine, or addressing the divine, it persuades its receivers to embrace certain religious doctrines or preserve existing ones (Pernot, 2006). In his article, Taiwo (2007) focuses on tenor in religious discourse in Nigeria and which indicates role relationships in a discourse and clarifies the speaker's intentions, hence indicating the type and purpose of the discourse. Taiwo (2007) discusses multiple examples of religious discourse where the purpose of the preacher is to persuade the listener and affect the way he/she interprets the meaning of the message. The author notes that religious figures tend to employ a simple and polite language that would appeal to most of the listeners even when such messages involve a condemnation of certain practices such as prostitution, smoking, and drinking (Taiwo, 2007). The following example is used by the author to illustrate his interpretations

> *"My listener, that strange woman you are going out with will not do you any good she will only draw your heart away from God." (p. 83)*

On the other hand, it is important to note that just as there is religious discourse there also exists anti-religious discourse which similarly aims at persuading its recipients to adopt certain ideas (Pernot, 2006).

Despite the nature of the discourse, the use of language to manipulate and influence thought remains an evident attempt. In this respect, it is important to discuss how manipulating cognition really occurs. Generally, discourse and language involve the processing of information in the short term memory (STM) which results in understanding of words, sentences, and other linguistic features and, hence, assigning meaning to them (Dijk, 2006). In consequence, particular messages can be specifically highlighted by altering their path in STM through the use of multiple strategies such as certain linguistic features as well as visual representations (Dijk, 2006). Manipulative discourse primarily involves a control over the mind which goes beyond the level of persuasion to a deeper level of manipulation where the receiver becomes more passive (Dijk, 2006).

The type of discourse can shift from one field to another, from being political to religious or social; nevertheless, the employment of language in these fields as a tool to influence thought is apparent. Attempts of using language to cover up certain facts, modify realities, and above all mobilize public support indicate that there exists an evident link between language and thought. In this respect, language is not only being used as a tool of representation for certain ideas but is being employed to trigger and impact the thinking of its receivers. Perhaps Boroditsky's interpretation on the issue best describes the relationship between the two variables, language and thought, where the author explains that both tend to interrelate (Boroditsky, 2011). Boroditsky (2011) argues that what has been called by multiple researchers and philosophers "thinking" seems to actually involve two interrelating processes, the first linguistic and the other non-linguistic.

In this chapter, a detailed body of literature on the topic of language and thought was reviewed in an attempt to provide a valid contextual background and highlight key views in this area of research. The following chapter will present information on the study conducted in this paper and will clarify its procedure and methodology.

CHAPTER THREE

SAMPLING AND METHODOLOGY

3.1 Overview

The purpose of the conducted study was to explore any existing relationship between language and thought and examine whether one influences the other. The aim here was not to emphasize any hypothesis but to shed light on any link between these two variables. As the literature in this area of research suggests, any existing link between language and cognition remains controversial and open to views. As a result, a body of empirical research becomes fundamental to study these two variables and what correlations they might share.

It is assumed that the study conducted in this research paper would help in clarifying the nature of relationship between the two variables, language and thought, as well as it would add to the existing body of research in this area. The major research questions emphasized in the conducted study are listed below:

1. Does language influence people's thinking about issues?
2. Does language influence the way people perceive a certain reality?

3.2 Research design and methodology

The study was a qualitative research study that examined individuals' cognitive responses to language. By definition, qualitative research is a type of research that seeks to investigate and examine the quality of links, relationships, or correlations between any existing variables or elements (Fraenkel & Wallen, 2010). The emphasis in this type of research is on description, specifically holistic description which relies on providing a detailed explanation on the outcomes of the study rather than just comparing their effects

(Fraenkel & Wallen, 2010). It is important to note that qualitative research attempts to study the "why" of the outcomes of a certain study and not just look at how the outcomes were achieved (Ereaut, 2011).

Investigating and studying individuals' behaviors and attitudes is at the heart of qualitative research (Ereaut, 2011; Fraenkel & Wallen, 2010), and this is why this type of research was chosen for the conducted study. In the following study, the aim was to examine participants' responses and analyze what might have influenced and caused these responses. Being concerned with both the process and the product, qualitative research seeks to observe how individuals' interact, respond to certain questions, and translate their ideas through their attitudes and actions (Fraenkel & Wallen, 2010).

The research methodology used was that of experimental research. Since the major purpose of this study was to investigate the existence of any relationship between language and thought, experimental research was chosen to help fulfill this goal as it is considered to be among the best methodologies that test cause and effect relationships between variables (Fraenkel & Wallen, 2010). This methodology allows the researcher to directly influence or manipulate a certain variable in an attempt to examine subsequent outcomes (Ross & Morrison, 2004; Cohen, Manion, & Morrison, 2000). In fact, experimental research further enables the researcher to investigate what might have actually caused the outcomes of the study (Fraenkel & Wallen, 2010).

As required by this methodology, participants should be divided into two groups, the experimental and the control or often called comparison group (Ross & Morrison, 2004; Fraenkel & Wallen, 2010). In such a research, the experimental group receives the treatment or the independent variable which is usually manipulated by the researcher whereas the control group does not receive any form of treatment (Cohen et al., 2000). The outcomes of

such a study show whether or not the treatment has had any effect over the participants (Ross & Morrison, 2004; Fraenkel & Wallen, 2010).

In the following study, the two groups were exposed to the same editions of magazine covers. While the control group received the original magazine covers, the experimental group was exposed to a modified version of these covers.

The chosen covers were two different editions of *Time Magazine*. The first cover page (cover (a)) was a 2009 edition that covered the economic crisis that occurred in the United States and other regions in the world (see Appendix A). The cover image had a greyish background and showed smoke coming out of an iron lighter. A caption that accompanied the image read: "World Economy Goes up in Smoke, a detailed report."

The second cover page (cover (b)) was a 2001 edition that tackled global warming (see Appendix B). The cover page of this edition depicted the earth in an egg, fried inside a black iron pan with a reddish and orange background. The caption that accompanied this cover image was: "Global Warming. Climbing temperatures. Melting glaciers. Rising seas. All over the earth we're feeling the heat. Why isn't Washington?"

The two cover pages were made up of one large image that represented the news story covered in the magazine, in this case the economic crisis and global warming. The captions were placed along with each picture hinting at the title or the content of the respective article. The name of the magazine was cut from both pictures before being distributed to the participants in order to avoid any possible distraction.

While the control group received this original version of the two cover pages, the experimental group received a modified version of the two. This modified version included the same pictures but without any captions. Hence, in this version, the two covers showed only images without any supplementary titles, words, or sentences. The purpose behind this

modification was to test participants' perceptions of the two images in the presence and absence of language.

3.3 Instrumentation and sampling

A questionnaire was used to test participants' perceptions and responses to the given cover pages (see Appendix C). The questionnaire aimed at examining participants' interpretation of the given pictures and whether such interpretations would be altered, in any way, by the accompanying captions. The questionnaire was made up of supply items, specifically short-answer questions, which required participants to answer in their own words. These supply items were open ended in order to allow the participants to express their views without any limitations (Cohen et al., 2000). The purpose of these open ended questions was to be able to attain authentic and honest responses that purely reflect the views and understanding of the participants (Cohen et al., 2000). Furthermore, choosing the questionnaire as an instrument for this study has had the advantage of permitting participants to respond to it at the same time (Fraenkel & Wallen, 2010).

The questionnaire contained four short-answer questions as well as information on the participants' gender, age, and educational background. The first two questions were general questions that asked about the topic of each news story that might accompany the image. The purpose behind these questions was to examine participants' understanding of each image in the two versions. Question number three required participants to come up with an appropriate title or headline to each of the images. This question further supported the purpose of the first two questions, as it aimed at observing how each participant had perceived the image based on his/her own understanding. The last question in the questionnaire was a specific question that asked about the meaning of the grey smoke in cover (a). This question attempted to examine how participants perceived this element of the image and to test whether they would

explain it based on their initial understanding of the image which was tested in question number one.

The participants of the study were 42 students that attended an American style university in Beirut, Lebanon. Choosing an experimental research methodology, it was crucial to control certain extraneous variables in order to protect the study's internal validity (Ross & Morrison, 2004) which shows that the implications of the researched issue can actually be achieved through the selected data (Cohen et al., 2000). For this sake, participants of both groups had equivalent characteristics. First, they were all under the same age group that ranged between 17 to 20 years. Moreover, they were first year university students (Freshman & Sophomore levels) and had a similar educational level. The students' majors of both groups varied between science, arts, engineering, and business majors but all attended the same course level of English language (English 101).

Finally, there were no restrictions regarding the participants' gender, personal status, or ethnicity and they all participated voluntarily and anonymously in the study without being asked about their names. Consequently, the two groups had been chosen to be as equivalent as possible in an attempt to protect the study's internal validity.

Prior to conducting the study, a pilot study was also conducted in order to examine individuals' reactions and responses to the two chosen images as well as the open-ended questions of the questionnaire. The purpose behind this pilot was to check whether the two chosen magazine cover pages could be perceived and understood differently by students. In addition, it was important to also check whether the open-ended questions were clear and caused no confusion.

The study was piloted on 18 students attending a language course at the university level. The students were first shown the modified version of the two cover pages, the version that contained only the images and lacked the headlines. Then they were orally asked the

open-ended questions where each student had the chance to state how he/she perceived the image. Following this, the original cover pages were shown to the students who were asked to answer the same open-ended questions. High divergence in students' responses was evident in responding to the two versions.

3.4 Procedures

Each group, the experimental as well as the control group, contained a total of 21 participants. Among the 21 participants of each group, 12 were males and 10 were females. As mentioned earlier, the two groups of students attended the same English language course but each group represented a different class section. Moreover, both groups responded to the same questionnaire at different timing depending on the time of the English language course; nevertheless, variation occurred in the magazine cover pages that were chosen. The first group of students or the control group received the original versions of the two front cover pictures. These versions contained the image as well as its respective caption. The students were given few minutes to examine the two images carefully, and then they were given the questionnaire and asked to respond to it thoroughly.

On the other hand, in the second group or the experimental group, participants were given modified versions of the two front cover images where the captions were removed, hence, leaving the students to only observe the images. Participants of this group were given the same duration of time to observe the images, and then they were given the same questionnaire and asked to respond thoroughly to it. Both groups responded to the questionnaire within 15 minutes and were asked not to share their answers among each other or to ask questions related to the understanding of the images. The whole study occurred under my supervision as the researcher where I explained to the participants the instructions of the study. It is important to note that the participants were not informed about the main

purpose of the study in order to avoid any possible influence on their perceptions and understanding of the images.

3.5 Ethics in research

The conducted study had taken into account the ethical principles of an educational research and had worked on protecting and maintaining them. By definition, the word ethics refers to questions that point at what is considered to be right or wrong (Fraenkel & Wallen, 2010). Perhaps the principles of ethics in research can be summed under two major categories which were well considered in this study. The first key principle deals with participants' wellbeing, freedom, and consent (Cohen et al., 2000; Howe & Moses, 1999). Prior to conducting the study, students were given the choice of participating and being part of this study after they had been informed about the study's procedure and their role in it. As a result, the study was conducted under the full consent of the students and none was obliged to participate in it.

Providing participants with explanations and information about the study, its nature, and purpose is essential and can be done after the collection of data to avoid any possible inconveniences that might affect the flow of the study (Fraenkel & Wallen, 2010). Since students were not previously told about the main purpose of the study in order to avoid any possible influence on their responses, the details of the study were fully explained to them after they had completed the questionnaire. Moreover, since participants' wellbeing and safety are among the basic ethical principles (Howe & Moses, 1999; Fraenkel & Wallen, 2010), the study was conducted in a classroom where participants' mental and physical comfort was well-preserved.

The second key principle in educational research ethics deals with confidentiality and the protection of privacy (Cohen et al., 2000; Fraenkel & Wallen, 2010). In this respect, participants' personal information should be given considerable respect in any type of

research (Howe & Moses, 1999; Fraenkel & Wallen, 2010). As a result, the participants of this study were allowed to participate anonymously as well as they were not asked questions about their personal life or social status. Moreover, in order to protect the study's confidentiality, only the researcher had an access to the collected data. Hence, students' responses were only viewed by the researcher and none of these responses were made public.

3.6 Data analysis

The collected data was examined and analyzed appropriately in order to be able to come up with answers to the stated research questions. Using a qualitative approach to research, it had been crucial to choose an appropriate method for analyzing the obtained data. For this sake, content analysis of the participants' responses to the open-ended questionnaires was performed in an attempt to study the implications of these responses.

By definition, content analysis is a research technique that allows the researcher to examine and study the human behavior through the analysis of any type of communication (Fraenkel & Wallen, 2010). It is a method used to establish valid interpretations from a certain text (Weber, 1990). This technique is widely used in qualitative research and is primarily used to infer the implications of people's communication (Willis, 2008; Hsieh & Shannon, 2005). Using content analysis in this study enabled the interpretation of participants' underlying beliefs and perceptions in regard to the images they view.

The data that was analyzed in this study was students' narrative responses to the open-ended questions. The purpose behind content analysis is to convert the narrative data obtained into codes or categories which, in turn, would hint at and explain the underlying implications of such data (Hsieh & Shannon, 2005; Weber, 1990). As a result, the basic goal of this technique is "to provide knowledge and understanding of the phenomenon under study," (Downe-Wamboldt, 1992, p. 314).

A conventional approach to content analysis was used in analyzing participants' responses. This approach is generally appropriate to studies whose goal is to describe a certain phenomenon (Hsieh & Shannon, 2005), in this case, participants' reactions to the images in the presence and absence of language. Using this approach, categories, codes, and themes were originated from the collected data (Hsieh & Shannon, 2005; Fraenkel & Wallen, 2010). The units that were studied and analyzed in the following study are words and terms used by the participants to respond to the questions. In consequence, the code categories were subsequently derived from these responses and were then grouped into themes based on the links between these categories.

Using the conventional content analysis approach, I started analyzing the data through reading participants' responses to each of the four questions in order to obtain a general overview of the collected data. Then, the responses were carefully read again and code categories were derived from them through the highlighting of certain words that appeared to represent key ideas and concepts. After the coding process of all the responses ended, a coding scheme was obtained. Codes were then sorted out into categories of themes depending on how multiple codes could be linked or related.

Following this, analysis was done to study the relationships between the obtained themes and the variables of this study. In discussing the findings of the study, relevant studies were reviewed and compared. It is important to note that the main advantage of using the conventional approach to content analysis is that it allows the researcher to derive information directly from participants' responses without imposing any preconceived concepts or codes extracted from a theoretical context (Hsieh & Shannon, 2005).

In this chapter, a detailed explanation on conducting the study and the methodology used in collecting and examining the data was discussed. The preceding chapter will report on the findings of this study. These findings will be accompanied with a discussion that

analyzes their implications as well as compares them to other findings of existing research studies in the same field.

CHAPTER FOUR

FINDINGS

4.1 Overview

In this chapter, the collected data are analysed, discussed, and evaluated in an attempt to interpret the study's outcomes. As mentioned earlier, the conventional approach to content analysis was used to analyse the data. Such approach involved the interpretation of words and terms in order to establish a descriptive analysis of the findings of the study. The 42 responses were carefully read and analysed. Interpretations of the findings would follow the analysis and a thorough discussion of major issues would be presented.

It is important to note that this chapter is not a mere description of the findings of the conducted study, but rather it is an attempt to find concrete answers to the research questions of this paper. Hence, the major aim of this chapter is to highlight the implications of the findings of the study that would, in turn, contribute to answering the specified research questions.

This chapter is divided into two major parts. In the first part, the findings of the study are presented. An explanation of these findings is provided, in this part, and a detailed description of participants' responses is reviewed. In the second part of this chapter, analysis and discussion of the findings takes place. The analysis deals with each image separately and reference to major concepts and ideas discussed earlier in the review of literature are integrated with the analysis.

4.2 Findings

Participants' responses to question one of the given questionnaire varied between the two groups. The questionnaire aimed at examining how participants would interpret images (a) and (b) in two different groups. The findings are provided below according to each question of the questionnaire. Hence, the findings of each question in both groups are reviewed separately.

4.2.1 Question # 1

The first question of the questionnaire aimed at investigating how image (a) can be viewed and perceived through asking about the news story that might accompany such image. Participants' responses in both groups were grouped into themes in order to simplify the coding procedure. Such themes had been extracted from words, terms, and sentences used by the participants themselves to answer the questionnaire's questions.

In the experimental group, participants' responses could be divided into two major themes: smoking and pollution. Under the first theme "Smoking," lied the vast majority of the participants (n=13, frequency= 61.9 %) who considered that the news story associated with image (a) was about smoking, and hence, they viewed the image as being related to the theme of smoking. The codes of this theme and which were directly highlighted from participants' answers involved words and terms that relate directly or indirectly to smoking. Some of these words are "cigarettes," "smoking habits," "smoke," and "lungs."

On the other hand, another theme, the theme of "Pollution," was also deducted from some of the responses. Only two participants (frequency = 9.5 %) related the image as well as

its associated news story to pollution. These participants considered that image (a) reflected air pollution and the environment. Codes of this theme included words such as “fire,” “air pollution,” and “burn” which describe air pollution and its effect on the environment.

Furthermore, it is important to note that four participants (frequency = 19 %) merged both themes and identified that the news story associated with image (a) was concerned with smoking and pollution in the meantime. The remaining number of students (n=2, frequency = 9.5 %) did not answer the given question, and hence their responses could not be counted in this question.

Similarly, responses of the control group could also be categorized under two major themes. Nevertheless, a new theme had emerged in this respect. This theme made up the vast majority of participants of this group (n=19, frequency = 90.4 %) who specified that the news story accompanied with mage (a) was about the economic crisis. Participants under this theme stated that the news story associated with the image was about the economic crisis. The codes extracted from participants’ answers conveyed this theme and included words such as “world economy,” “prices,” “bankruptcy,” and “money.”

On the other hand, “Pollution” had been the second theme where the remaining two participants (frequency = 9.5 %) thought of it as being the topic of the news story. Codes falling under this theme category included “pollution” and “health.”

The following table shows the four themes extracted from the two groups as well as the codes that relate to each theme.

Table 4.1

	Experimental Group		Control Group	
	Theme # 1: Smoking (Number of participants: 13)	Theme # 2: Pollution (Number of participants: 2)	Theme # 1: Economic crisis (Number of participants: 19)	Theme # 2: Pollution (Number of participants: 2)
Codes	Black smoke	Air pollution	World economy	Pollution
	Grey smoke	Burn	Deterioration	Health
	Smoking	Fire	Prices	Smoke
	Lighter	Danger	Economy falling apart	
	Smoking habits	Polluting the air	Downfall of economy	
	Cigarettes	Environment	Economic disaster	
	Smokers		Bankruptcy	
	Lungs		Government	
			Salaries	
			Inflation of economy	
			Money	

Table 4.1: Participants' interpretation of image (a) in both groups.

4.2.2 Question # 2

Question two of the questionnaire asked about image (b) and the topic of the news story that might accompany this image. Participants of both groups answered this question differently. Themes were also used to categorize and arrange the responses in this section.

In the experimental group, two key themes had been derived: "Healthy Food" and "Global Warming." A number of eight participants (frequency = 38 %) related the news story of image (b) to the topic of healthy food. These participants included words such as "eggs," "food," "proteins," and "eating habits" in their answers.

On the other hand, the majority of participants in this group (n=12, frequency = 57.1 %) related the image to global warming which was the second theme, in this respect. These participants viewed the image as representing the increase in temperature and the problem of

global warming. Codes falling under this category included “earth,” “atmosphere,” “rising temperature,” and “fire.”

The remaining one participant (frequency = 4.7 %) did not answer this questions, and hence his/her response would not be counted in this section.

In the control group, on the other hand, participants’ responses were similar. All 21 participants considered “Global Warming” as being the topic of the news story associated with image (b). In this group, the only theme was that of global warming where all the responses to the questions were equivalent. Codes falling under this theme and extracted from participants’ answers included “heat,” “danger,” “temperature,” and “melting glaciers.”

Table 2 represents the themes and codes of both groups.

Table 4.2

	Experimental Group		Control Group
	Theme # 1: Healthy food (Number of participants: 8)	Theme # 2: Global warming (Number of participants: 12)	Theme # 1: Global warming (Number of participants: 21)
Codes	Eggs	Global warming	
	Food	Planet	Global warming
	Breakfast	Earth	Heat
	Eating habits	Atmosphere	Danger
	Disease	Burn	Planet
	Health	Fire	Earth
	Healthy food	Rising temperature	Burn
	Proteins	Melting	Environment
	Cooking	Danger	Temperature
		Destruction	Melting glaciers
		Ozone layer	

Table 4.2: Participants’ interpretation of image (b) in both groups.

4.2.3 Question # 3

In question 3, participants were asked to come up with an appropriate title for each of the two images they were exposed to. Titles written by participants of the experimental group for image (a) were in line with the two themes that were highlighted by these participants in their initial responses to question 1. Fifteen participants wrote titles related to theme # 1(smoking), while three participants thought of titles associated with theme # 2 (pollution). The remaining number of participants (n=3) did not answer this question, and hence, their responses could not be counted in this section.

On the other hand, the majority of participants in the control group (n=18) entitled image (a) with headlines related to theme # 1 (the economic crisis). Only two participants in this group wrote titles associated with theme # 2 (pollution) and one participant did not answer the question, and hence, his/her response would not be counted in this section.

As for image (b), most of the participants in the two groups came up with titles related to the theme of global warming. In the experimental group, a number of 12 participants chose titles related to global warming for image (b). Eight participants of this group chose other titles related to the other theme (healthy food) and only one participant did not answer the given question and hence did not record any response.

Similarly, the vast majority of participants in the control group (n=20) came up with headlines related to global warming. The remaining participant did not answer the given question, and hence his/her response would not be recorded in this part.

Table 3 shows the categorization of participants' responses in both groups and for the two images.

Table 4.3

	Image (a)				Image (b)		
	Experimental Group		Control Group		Experimental Group		Control Group
	Theme # 1: Smoking	Theme # 2: Pollution	Theme # 1: Economic crisis	Theme # 2: Pollution	Theme # 1: Healthy food	Theme # 2: Global warming	Theme # 1: Global warming
Number of participants	15	3	18	2	8	12	20

Table 4.3: participants' responses to question 3 in both groups.

4.2.4 Question # 4

The last question of the questionnaire attempted to allow the participants to reflect on the grey smoke that is shown in image (a). The purpose of this question was to examine whether participants' responses and the way they perceived this element were in line with their initial understanding of the same image.

The majority of participants in the experimental group (n=15) perceived the grey smoke in image (a) as symbolizing death or illness as a result of smoking. These participants justified their answers and emphasized their initial understanding of the image which had been associated with the theme of smoking (theme # 1). In what follows, some extracts of participants' responses are presented. These extracted are literally copied as they were written by the participants themselves.

Extract # 1:

"The grey smoke symbolizes death due to smoking."

Extract # 2:

"The grey smoke might symbolize the soul."

These extracts along with the other responses indicate that participants had associated the grey smoke in the image with the human soul, death, disease, and other words that further relate to and support the theme of smoking.

Moreover, four participants related the grey smoke to pollution. These participants fall under theme # 2 (pollution) and they viewed the smoke as symbolizing the harm of air pollution. In addition, two participants did not answer the given question, and hence their responses would not be counted in this section.

On the other hand, participants in the control group answered question four differently. The vast majority (n=20) related the grey smoke of image (a) to the economic crisis. These participants viewed the smoke as being a symbol for the devastation and deterioration of world's economy, and they elaborated on the consequences of this crisis. Expressions literally extracted from participants' responses to this question are listed below.

Extract # 1:

"The grey smoke symbolizes the ashes of the destroyed economy."

Extract # 2:

"The grey smoke symbolizes the destruction of the economy."

Extract # 3:

"[The grey smoke symbolizes] how the economy is being burned."

In addition, only one participant in this group viewed the smoke as a symbol for pollution. This participant fell under theme # 2 (pollution) and explained that the smoke represents the polluted world.

4.3 Analysis and discussion

The findings reported above were carefully analysed and compared in an attempt to clarify their implications and answer the initial research questions. The analysis had revealed several points worth highlighting. These points are presented in this section as well as they are explained and thoroughly discussed. Analysis of each image is provided separately in order to ensure a valid explanation.

It is firstly important to note that in each group, participants' responses to all of the given questions were noticed to be in line with one another. In other words, each participant reflected a single idea in all of the questions as the data presented in each question was found to support the data of the previous and latter questions. Hence, each participant had a clear and unified mode of thought which he/she translated in answering the questions. This mode of thought was easy to follow and understand preventing any confusion to occur. This aspect highlights the fact that each participant was sure of his/her thoughts regarding the two images and was able to translate these thoughts through his/her answers to all the questions.

4.3.1 Image (a): Experimental vs. Control Group

Analysis of participants' perceptions of image (a) between the two groups reveals significant implications. While participants viewing the image without any title accompanying it (participants of the experimental group) thought about it in isolation, the other participants viewing the original image with its title (participants of the control group) showed an influenced understanding. Participants of the experimental group related the image to smoking and/or pollution, and their perceptions were based on their personal analysis as well as it was not altered by any external elements, such as language. Hence, it can be

assumed that their interpretation was solely dependent on their personal thoughts and perceptions.

Moreover, relating the image to the themes of smoking and pollution can be justified by the appearance of the lighter and the smoke coming out of it (see the image in Appendix A). In this respect, it is important to note that the participants themselves elaborated on describing the figure of the lighter as well as the smoke in an attempt to explain their responses. As a result, participants of this group depended on the visual appearance of the image to think about its meaning as they have thought about smoking and/or pollution as being represented by the shape of the lighter and the greyish smoke.

On the contrary, participants in the control group perceived the image differently. These participants, and who were given the original image with its associated headline, indicated distinct answers that were in line with the headline of the image. In other words, the vast majority of participants in the control group (n=19) thought about image (a) as being related to the world's economic crisis just as the headline of this image implies. This finding is sharply contrasted with the responses of the participants in the experimental group who viewed the image without any linguistic interference, and hence, explained it based on their own understanding of the visual image.

It is important to note, in this respect, that none of the participants of the experimental group perceived the image as being related to the economic crisis. As a result, this aspect draws the attention towards presuming that the presence of the headline had directly influenced the way participants in the control group thought about the image. These two findings can be compared to a concept discussed in the literature review which is that of semiology and its implications. As it had been discussed earlier, semiology is the study of the social production of meaning through signs which could take a verbal or visual form

(Branston & Stafford, 1999; Burn & Parker, 2003). In this study, the finding of the experimental group suggests that the participants were affected by the visual appearance of image (a) to which they contributed more than one meaning. This finding resembles a major characteristic of signs which is their polysemic nature, or the ability to have multiple and varied meanings. In fact, the varied interpretations given by the participants of the experimental group highlight that image (a) can have multiple meanings and can be perceived differently depending on how each individual thinks about it.

On the other hand, the contrasting finding of the control group sheds light on a crucial aspect that further ensures the polysemic nature of the image (Ravin & Leacock, 2000). This aspect is that of the usage of language to influence or guide the thinking of the receivers, in this case, the participants. As explained by Branston and Stafford (1999), language is one of the ways that can be used to control the ambiguity of visual images. In the control group, language was employed through the presence of the headline or the caption which had shown to have a direct influence on participants' thinking and interpretation of the image. Branston and Stafford (1999) called such a phenomenon anchoring, a process through which the meaning of visual images is controlled by the usage of captions.

In consequence, the massive difference that lies between the two findings suggests that the headline, which was present in only one of the groups, is the element responsible for this sharp divergence. Hence, it can be suggested that such headline was able to affect the thinking of the participants in the control group, and hence lead them to relate the image to the economic crisis. These findings again resemble what Branston and Stafford (1999) explained about language and its ability to not only represent ideas but most importantly determine the way people perceive such ideas.

Furthermore, these findings also come to agree with the definitions of the concept of linguistic relativity which was discussed earlier in the literature review. These definitions emphasize that language represents a view of reality as well as it has the capability of actually influencing people's thoughts about such reality (Lucy, 1997; Hill & Mannheim, 1992). This capability was clearly noticed in participants' responses to image (a) in this study.

In addition, it is important to note that the contrasting data between the two groups was evident from participants' responses to the first question of the questionnaire and which required them to anticipate the topic of the news story that might accompany image (a). Nevertheless, participants' responses to the other questions that followed further supported their initial claims and clarified each participant's idea.

In this respect, it was noted that participants' responses to each of the three questions that tackled image (a) (see Appendix C to review the questionnaire) were in line with the initial theme that each participant specified. As a result, the responses of the participants in the experimental group were related to either the theme of smoking or that of pollution. In contrast, the majority of responses of the participants in the control group were related to the economic crisis and only two participants talked about air pollution. This aspect further supports that participants who viewed the modified image, deprived of its headline, answered all the questions based on their personal understanding and interpretation. On the contrary, participants who were able to view the image's headline were guided to think in a certain manner that agrees with the idea of the headline and this influence was evident in the responses to all the questions which supported the idea of the headline. As a result, it is the usage of language which contributed to this sharp difference in participants' thoughts. This aspect can be compared to what Wittgenstein (1953) explained on this topic where he considered that meaning is fully completed and conveyed through the use of language which

might differ from a context to another. Hence, it is the usage of language in image (a) that led the participants of the control group to perceive the same image differently from those of the experimental group.

The analysis presented in this section points out that the headline which accompanied the original version of image (a) was able to influence the thinking of the participants viewing this version. As a result, this analysis highlights that such a linguistic interference has had a remarkable impact on participants' cognition through leading them to think about certain ideas and disregard others.

4.3.2 Image (b): Experimental vs. Control group

The high divergence in participants' responses that was noticed in image (a) was not very evident in image (b) since both groups had a certain degree of similarity in understanding and interpreting the image. Nevertheless, analysis of the responses of the two groups reveals a significant aspect worth highlighting in this discussion. While it is true that most of the participants of the experimental group (n=12) related image (b) to global warming, a good number of participants of the same group (n=8) had a different and distinct understanding of the image. In fact, there is not a sharp difference between the two frequencies where the majority of participants had a frequency of 57.1 % in comparison to 38 % of the others who answered differently (the remaining 4.7 % represent the participant who did not respond to the question). The eight participants who related the image to healthy food had perceived the elements of the image as being related to this theme, different from the other 12 participants who thought of global warming. This shows that participants viewing this image had distinct and dissimilar ideas about the image and each thought about it in a personal manner and relied on different aspects to support his/her interpretation. As a result,

the varied responses of participants of this group suggest that the image can have multiple interpretations that do not have to be related or linked in any way.

This result is similar to what had been discussed in the findings of image (a) regarding the polysemic nature of images (Branston & Stafford, 1999; Ravin & Leacock, 2000). This nature is again noticed in the varied responses of participants belonging to the experimental group and who have viewed the image without any linguistic interference.

On the other hand, the findings of the control group represent a different implication. All of the participants of this group were found to perceive the image similarly without any differences as they all related it to the theme of global warming. This shows that participants who were exposed to the original image with its accompanying headline had no doubts that the image was about global warming in contrast to those participants who viewed the image without its title, and hence, thought about different topics that might relate to it.

In consequence, it can be inferred that the headline found in the original version and which was distributed to the control group only, helped in influencing participants' thinking about the image and directed them all to answer the questions in a certain manner that reflects the headline's idea. This result also agrees with that discussed regarding image (a) where captions were noted to have an evident and direct influence on participants' thinking. As a result it can be inferred that, as Litosseliti (2006) suggests, people's interpretations are influenced by language in a way or another.

It can also be suggested that the factor that led the 12 participants of the experimental group to think about global warming was the shape of the earth represented as an egg being fried in the iron pan (see the image in Appendix B). This factor had been deduced from analysing the answers of the 12 participants to question 2 where they attempted to describe

the egg-shaped earth being fried and cooked on fire. The below extracts represent some of the answers written by the participants of the experimental group. These extracts were literally copied from participants' own answers, and they show that these participants heavily relied on describing the egg-shaped earth seen in image (b) to justify their ideas.

Extract # 1:

"The image illustrates the earth [as] being cooked [like] an egg."

Extract # 2:

"The earth is in yellow which shows that it is on fire […]"

Extract # 3:

"The frying of the egg looks like the earth which might symbolize global warming […]"

The description found in these extracts shows that the participants were influenced by the shape of the egg which looks like the earth. This influence had, in turn, led them to think about global warming. It can be inferred that the other eight participants that thought of the theme "healthy food" did not notice the earth shape and viewed the image as representing a mere egg.

The above analysis of participants' responses on image (b) shows that linguistic interference had helped in guiding and influencing participants' thinking. When such interference was absent, participants' responses were noticed to vary. On the contrary, when participants had the chance of reading the headline of image, it was noticed that their responses were similar and in line with the headline's idea.

The findings discussed above suggest that the element of language has had an evident and strong impact on participants' mode of thinking. In interpreting the two images, (a) and (b), participants of both groups were noticed to have varied responses. Those who viewed the images without their headlines were noticed to have several varied interpretations. On the contrary, participants who viewed the original images with their accompanying headlines were noticed to have more certain and equivalent answers that were in line with the ideas of the two headlines. As a result, these findings suggest that the two headlines were able to affect the ideas and thoughts of participants leading them to perceive the two images in a certain manner.

These findings can be gathered with the multiple approaches done by different researchers who realized an influential relationship between language and thought. As discussed in the literature review, many researchers such as Vygotsky (1962), Agnoli and Hunt (1961), Brown (1979), and many others discussed the influence of language on cognition. The findings of this study happen to reflect this idea and shed light on an influential relation between the two variables.

Moreover, as it has been reviewed earlier, several empirical researches have attempted to study the possible impact of language on thought. Studies using the color stimulus and space, reviewed in chapter two, had attempted to examine the impact of differences in languages on individuals. Most of these studies concluded a link between language and thought where it was shown that differences in language yield to differences in thought (Brown & Lenneberg, 1954; Lenneberg & Roberts, 1956; Davidoff, Davies, & Roberson, 1999; Kay & Kempton, 1984; Bowerman, 1996; Brown, 1994; Casad & Langacker, 1985; Talmy, 1985). The study conducted here, though it had not looked at different languages, had also shown that language affects thought. As a result, this study had

looked at the two variables, language and thought, in a different manner; yet, its purpose was similar to the other studies discussed, which is to examine any kind of relationship between language and thought.

In addition, the findings of this study relate to the language-thought doctrine which was initially referred to by Whorf and Sapir (Gentner & Goldin-Meadow, 2003; Boroditsky, 2011). The two linguists, who had introduced the language-thought hypothesis, had argued that language affects and shapes thought (Lucy, 1997; Boroditsky, 2011). In the findings of this study, it was noticed that language had a direct impact on individuals' thoughts and cognition. The two present headlines were seen to influence and control the way participants thought about the two images. A similar aspect was also discussed in the literature reviewed where it was explained how language can be employed as a tool to manipulate thinking in many fields.

The reviewed literature had shown how such a tool is used in fields of politics, media, and religion (Dijk, 2006; Kellner, 1992; Bev, 2008; Taiwo, 2007). As Wittgenstein (1953) explains, language is used as a tool in order to achieve certain ends. In this study, the findings showed that language was used to direct individuals towards thinking in a particular manner and understanding the images based on the ideas implied by the headlines.

In consequence, the analysis and discussion of the findings of this study showed that language had had a direct impact on participants' thoughts. These findings had been compared with concepts and ideas that were previously elaborated in the literature review and which discussed an influential relationship between language and cognition. The findings reviewed come to agree with Boroditsky's saying that language and thought are two interrelating variables that cannot be separated (Boroditsky, 2011).

CHAPTER FIVE

CONCLUSION

The discussion presented in this paper conveyed the debate over the relationship between language and thought. While many authors argued that these two variables are separate and unrelated, many others highlighted inherent links between them. As noted earlier, empirical research has been minimal in this area despite the emergence of multiple views, theories, and hypotheses that tackled the relationship between these two variables.

The study conducted aimed at contributing new data and valid implications that would add to the previous studies done in this field. Having presented, analysed, and discussed the findings of this study, it becomes crucial to relate such findings to the study's initial research questions as well as to shed light on their major implications.

It is first important to note that the two research questions of this study focused on examining whether language influences people's thinking about issues and their perceptions of reality. The findings of the study indicated that language has had a noticeable impact on the way participants responded and thought about issues. Hence, through this study it was shown that language had been able to influence people's thoughts and perceptions. This influence was evident through participants' responses in both groups, the experimental and the control group. Participants of the experimental group, and who had viewed the modified versions of the two images, had varied understanding of the images and different perceptions regarding the meaning of these images.

On the contrary, it was noticed that participants of the control group, and who had been exposed to the original version of the two images, showed similar interpretations to the

images which were in line with the two given headlines. These findings answer the initial research questions and indicate that language has an evident impact on the way people think about and perceive issues.

On the other hand, it is important to note that the findings of this study also highlight another significant aspect. Despite the fact that the purpose of the study was to examine the impact of language on thought, the findings have drawn another conclusion worth noting. This conclusion is related to the nature of visual signs, in this case these signs were images. Through this study, visual signs were noticed to have a polysemic nature which had enabled them to be perceived and interpreted differently by individuals. When these signs were viewed without any linguistic interference, their polysemic nature had been highly evident. In this respect, the findings of the study not only suggest that visual signs can attain multiple interpretations, but also shed light on the significant role that language plays in controlling their meaning. In other words, the findings indicate that language had been able to guide participants to perceive the images in certain and fixed manner at a time the same images had received multiple interpretations when viewed in isolation.

5.1 Limitations and implications for future research

The conducted study had few limitations that are worth noting. First, the size of the chosen sample was not very big as the study had taken place in a relatively short period of time and had focused on two main issues. Had the sample size been bigger, the findings would have been richer and more implications would have emerged. The sample size of the study was chosen to be moderate in order to facilitate the overall procedure and simplify the analysis of the data. Also, since the study tackled only two research questions, this size was considered to be suitable.

Another limitation concerns the minimal number of studies done in this area of research and which prevented the ability to compare and contrast the findings of this study with others. This limitation goes back to the lack of adequate number of empirical studies, as it was noted earlier in the review of literature. In this respect, it is important to note that most of the studies done in this field aimed at examining the impact of differences in distinct languages on individuals and not to study the influence of a language on individuals' thinking, which was the aim of the current study. As a result, the findings of this study could not be directly compared to findings of other studies and were rather compared to hypotheses, theories, and views arisen on the topic.

Finally, these limitations emphasize that the findings of this study should not be generalized but should rather pinpoint new ideas and implications that should, in turn, trigger a body of future research to emerge on the area. This body should further investigate the nature of relationship between language and thought. It should also attempt to focus on the *how* of the issue, in the sense that it should clarify how language might influence thought and to what extent this influence can be significant. Future research would help in clarifying the debate over this relationship as well as it would attempt to establish more valid and reliable implications.

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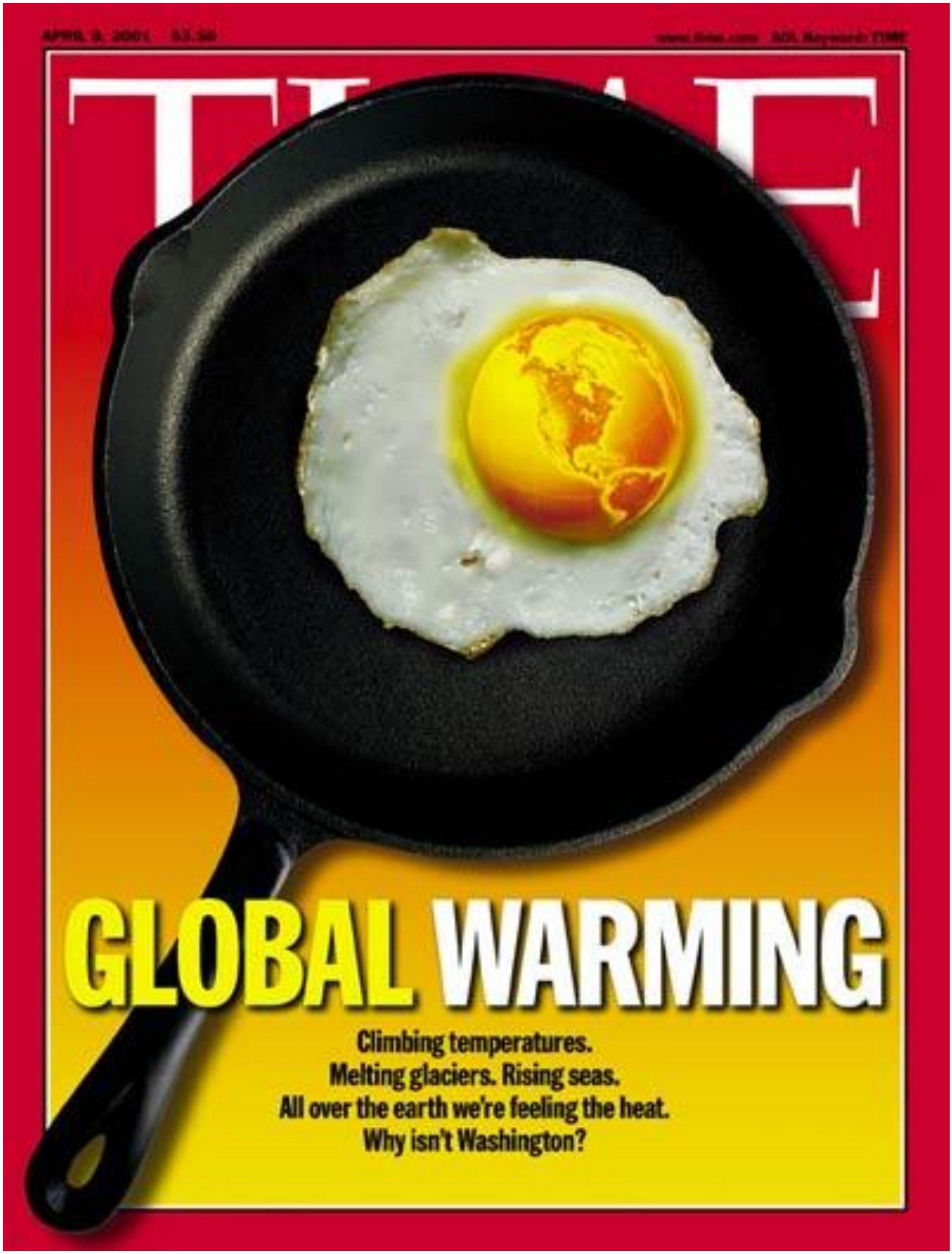
Appendix A

MARCH 8, 2009
DANNY'S FILM SWEEPS THE OSCARS...
CAN OBAMA REVIVE THE ECONOMY?
TIME
World Economy Goes Up In Smoke
A Detailed Report
www.almosh82.deviantart.com

Appendix B


GLOBAL WARMING
Climbing temperatures.
Melting glaciers. Rising seas.
All over the earth we're feeling the heat.
Why isn't Washington?

Appendix C

Questionnaire

- Gender:
  - Male
  - Female
- Age: _____
- Education: _____

The given questionnaire attempts to examine how participants perceive certain images and explain their content. The images used are front cover pictures of a news magazine.

- Instructions: Take few minutes to answer each of the following open-ended questions. Limit your answer to a maximum of five sentences.

1. What do you think is the news story associated with image (a) about?

---

2. What do you think is the news story associated with image (b) about?

_____

_____

_____

_____

3. Write a title/headline for the two news stories that might suit the given images:

    - Image (a)

_____

_____

    - Image (b)

_____

_____

4. According to you, what might the grey smoke symbolize in image (a)?

_____

_____

_____

_____

Thank you