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Framing effect, Foreign Language effect and the role of Syntax: What modulates the framing effect?

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Declaration

This submission is my own work. Any quotation from, or description of, the work of others is acknowledged herein by reference to the sources, whether published or unpublished.

Signature

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Abstract

This paper explores the phenomenon of people's choices changing according to the way a certain decision-making problem is presented (i.e. a loss or a gain situation) which is termed the "framing effect". People tend to be risk averse (i.e. they avoid taking risks) when they are presented with a gain frame and risk seeking (i.e. they take risks) when they are presented with a loss frame situation (Tversky & Kahneman, 1986). The other phenomenon examined here is the "Foreign Language effect" which supposes that when a decision problem is presented in a foreign language the framing effect is reduced. These two phenomena have been under investigation over the last decades. The last phenomenon that is going to be investigated in the present paper is the role of syntax in the framing effect which may be a new component in the framing effect equation. This paper's purpose is to replicate previous findings, namely that the framing effect also appears in another language not tested before, Greek, and that the framing effect will be reduced in Greek speakers' foreign language (English). A second goal is to investigate whether the framing effect will be altered when the theme abandons its conventional initial position in Greek while this position is occupied by the rheme which will be followed by the theme. More specifically, if the framing effect is further increased when the essence of the topic (rheme) precedes the topic itself (theme) while at the same time the rheme of the clause contains an emotional word regarding health issues. The data were collected through a questionnaire distributed to 242 students of the English Department of the National and Kapodistrian University of Athens (Greece). The questionnaire, apart from participants' personal information, included a decision problem, the Asian disease problem, and the respondents had to choose either one of the two options given according to the framing of the problem (gain or loss frame scenario). Participants were presented with the decision problem either in their native

language (Greek) or in their second/foreign language (English) and participants who were given the Greek texts were either presented with the decision-making problem where the theme was in initial position, or the problem where the rheme occupied the initial position. The surprising outcome of this study is that the framing effect is present in all conditions and the Foreign Language effect is absent from where it was expected to be found. What is more, the changes in the word order of the clause (theme-rheme order) did not provoke a strong enough modulation in the framing effect.

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Literature review

1. Introduction

Human communication is based mainly on language and the way people use language affects the quality and the flow of the communication as well as its effects. For example, a different reaction will be triggered if a doctor says to patients that they have another two years to live than saying that they will die in two years. The first one sounds more optimistic and positive while the second one more pessimistic and negative. Nevertheless, the outcome stays the same. Studies over the last three decades have shown that when a decision problem is presented (e.g. a dangerous new disease has been going around. Without medicine, 600,000 people will die from it. In order to save these people, two types of medicine are being made) and people have to make a choice that is introduced in a positive way (e.g. "If you choose Medicine A, 200,000 people will be saved but if you choose Medicine B, there is a 33.3% chance that 600,000 people will be saved and a 66.6% chance that no one will be saved.") they tend to make a choice that does not involve any risk and choose the safer option which is the sure gain (in this case that 200,000 will live). However, when people are introduced with a choice that is illustrated in a negative way (e.g. "If you choose Medicine A 400,000 people will die but if you choose Medicine B, there is a 33.3% chance that no one will die and a 66.6% chance that 600,000 people will die.") they tend to choose the riskier option (in this case Medicine B). This phenomenon is called the *framing effect* (Tversky & Kahneman, 1986; Sher & McKenzie, 2008; Keysar, Hayakawa, & An, 2012; Costa, Foucart, Arnon, Aparici, & Apesteguia, 2014; Takemura, 2014; Gvozdenovic &

Damnjanovic, 2016; Oganian, Korn, & Heekeren, 2016; Costa, Vives, & Corey, 2017). It is important to note that in any case (either in the negative or the positive frame) the choices (A and B in each frame) have the same outcome. For example, in the positive frame the option of Medicine A states that 200,000 out of 600,000 people will be saved and infers that the rest 400,000 will die. In the negative frame it is specified that 400,000 people will die but it is inferred that the rest 200,000 will be saved. So, irrespectively of the way the problem is presented (positively or negatively) the end result is the same. The only difference that prompts the diversion of choices and "blocks" people from being consistent in their preferences is the manner the problem is expressed (negatively or positively) which "inspires" people to make certain choices.

It is also considered that the language of presentation – native or foreign – plays a role in people's choices. More specifically, it is said that when a certain decision problem is presented in a foreign language the framing effect is reduced and people tend to be more coherent in their choices regardless of the framing (Costa et al., 2017). In other words, when a decision problem is introduced in a foreign language people incline towards more consistent choices. For instance, in the above example, people would not have the tendency to choose option A if the framing was positive. They would choose option A or B regardless of the way the problem was presented. This phenomenon is called the *Foreign Language effect* (FLe). Many academics claim that the FLe appears due to the reduction of emotionality in the foreign language (e.g. Keysar et al., 2012; Geipel, Hadjichristidis, & Surian, 2016) meaning that the foreign language does not carry such an emotional load as the native language and that this emotionality "shortage" is responsible for the people's unbiased choices in a certain decision-making problem. On the other hand there are others who place the emphasis on the increased cognitive tension that is prompted when using a foreign language (e.g.

Takemura, 2014; Winskel, Ratitamkul, Brambley, Nagarachinda, & Tiencharoen, 2016) meaning that the use of a foreign language increases the cognitive effort of the individual – since thinking in a foreign language is not something that happens automatically – and this increased cognitive effort is responsible for more logical and unbiased choices. This study will examine the aforementioned phenomena and will explore a possible relation of the framing effect with a syntactic phenomenon, namely the word order dislocation of the theme and rheme functions (Halliday, 1967; Lascaratou, 1998; Dejica-Cartis & Cozma, 2013). More specifically, this paper will examine whether the framing effect will be altered when the reader of the decision-making problem is given the rheme in the initial position of the sentence instead of the theme. This is the first attempt to detect whether a certain aspect of Syntax plays a role in the modulation in the framing effect. The latter examination will include only texts in the native language of the participants (Greek) since changing the theme order in English by placing the rheme first is ungrammatical. What follows is the description of the three phenomena mentioned above (the framing effect, the Foreign Language effect and theme-rheme) as well as conducted studies concerning them.

1.1 The Framing effect

The differential component between people and animals is their ability to make logical decisions that may bypass their instincts. All humans have the ability to follow the precepts of rationality, especially when they have to make decisions, no matter how difficult or trivial they may be. However, there is not only one option to present a certain problem. The way in which a problem is introduced may vary according to the choice of words to describe it and the message that must be conveyed to the decision-maker. The framing of the message may change and this may provoke a change in the choices

of the decision-maker (Tversky & Kahneman, 1981; Sher & McKenzie, 2008; Gvozdenovic & Damnjanovic, 2016).

The precepts of rationality entail that frame changes should not affect the preference between choices (Tversky & Kahneman, 1981). In their work, Tversky and Kahneman (1981) address the issue of rationality and claim that rational choices should obey some basic requirements of consistency and coherence, meaning that rational choices function irrespectively of the framing of a problem. Their research commenced with the *utility theory* according to which a set of axioms are obeyed that lead to the rationality of choices. More specifically, the utility theory states that if a rational decision-maker is confronted with certain choices, this person will choose the option whose outcomes grant the highest expected utility. Later on, they introduced *prospect theory* which modified the expected utility theory in order to contain inconsistencies in the decision-maker' s choices since people showed the tendency to select certain choices according to whether the choice involved gains or losses. Prospect theory set the foundations to what is now called the *framing effect*. "A framing effect is usually said to occur when equivalent descriptions of a decision problem lead to systematically different decisions" (Sher & McKenzie, 2006: 468). Gvozdenovic and Damnjanovic (2016: 406) give a similar definition: "The framing effect exists when different descriptions of formally identical decision outcomes lead to different choices".

There are three types of framing effects according to Levin, Schneider, and Gaeth' s (1998) taxonomy: attribute framing, risky choice framing, and goal framing. In attribute framing there is an item and what is compared is the attractiveness ratings of this item. In goal framing the comparison involves the rate of adoption of a certain behaviour. This research focuses on risky choice framing. In this type of framing there is a decision problem that is presented in a positive/gain frame (people will be saved)

or a negative/loss frame (people will die). The way a hypothesis is framed has an impact on how the evidence will be evaluated (e.g., Sher & McKenzie, 2008). When deciding in risky choice framing tasks, there is not a correct choice for the decision-maker to make. Whether people choose to be risky or not is not relevant. What matters is that they be consistent in their choice despite the way the problem is presented (Gvozdenovic & Damnjanovic, 2016). If people were not affected by the framing of the decision problem (positive or negative) and followed the precepts of rationality (consistency and coherence) they would make the same choice regardless of the framing of the problem (Tversky & Kahneman, 1981). Nevertheless, many studies show that people tend to be risk averse when the decision problem is framed positively and risk seeking when it is framed negatively (Sher & McKenzie, 2008; Takemura, 2014; Gvozdenovic & Damnjanovic, 2016; Oganian et al., 2016).

Bizer, Larsen, and Petty (2010) addressed the issue of the strength of negative framing over positive. They conducted two experiments in which participants were asked to support or oppose two candidates of two different political parties. In both experiments the participants who were asked to oppose one of the two candidates reported that they were more enthusiastic to volunteer for the campaign of their preferred candidate, donate money to his cause and vote for him. These results seem to indicate that negative framing is – among other things – responsible for enhancing attitude strength. Loss aversion appears to be the reason upon which these claims find ground. According to Tversky and Kahneman (1986), a substantial feature of loss aversion is that people tend to be more extreme when faced with a loss (negative) than with a gain (positive) scenario. This means that when people feel that they will lose something or someone, they are more willing to take risks. All these point to the fact

that the framing effects are indicative of the inconsistency in human decision making (Sher & McKenzie, 2006).

Gvozdenovic and Damnjanovic (2016) propose that decision-making tasks in risky frames consist of two structures: the *deep* and the *surface* structure. The former is associated with the formal features of a task (e.g. a prologue, a safe and risky option) and the latter with the content of the task and other variations. The domain is one important aspect of the surface structure. The domains used in such tasks are usually health, money, survival/death, morals, gambling, shopping, time as a resource, and ownership (Kühberger, 1998). The present study is based on an experiment from the health domain because decision-makers are more susceptible to risk when they are faced with a decision that involves health issues than, for instance, with a decision that is related to moral issues (Levin et al., 1998). For example, if someone is told that 100 people are going to die and a choice must be made between one of two options; option A being that 67 people will die, and option B that there is a 33.3% chance that no one will die and a 66.6% chance that 100 people will die, then this particular individual will be more prone to take a risk and choose option B than if the same individual was given a decision problem that involved the firing of pregnant women for instance. In the present study the well-known Asian disease problem is used. The Asian disease problem was first introduced by Tversky and Kahneman (1981). Keysar et al. (2012) and Costa et al. (2014) modified the original Asian disease problem in their research and this study uses their version of the problem.

Asian disease problem

Recently, a dangerous new disease has been going around. Without medicine, 600,000 people will die from it. In order to save these people, two types of medicine are being made.

Gain frame version

If you choose Medicine A, 200,000 people will be saved.

If you choose Medicine B, there is a 33.3% chance that 600,000 people will be saved and a 66.6% chance that no one will be saved.

Which medicine do you choose?

Loss frame version

If you choose Medicine A, 400,000 people will die.

If you choose Medicine B, there is a 33.3% chance that no one will die and a 66.6% chance that 600,000 people will die.

Which medicine do you choose?

The deep structure of the above problem is its prologue where the situation is given ("Recently, a dangerous new disease […] are being made"), and the options in both gain and loss frame (Medicine A being the safe option and Medicine B being the risky one). The surface structure is the Asian disease, a problem from the health domain. The structure of risky choice frames stays the same irrespectively of the language a certain problem is introduced.

1.2 The Foreign Language effect

Over the current decade research findings show that the framing effect is modulated when a particular decision-making problem is presented in a foreign language (Keysar et al., 2012; Costa et al., 2014; Geipel et al., 2016; Hayakawa, Costa, Foucart, & Keysar, 2016; Oganian et al., 2016; Winskel et al., 2016). The Foreign Language effect (FLe) shows when people's intuition and consideration of their decisions is influenced by the usage of a foreign language (Costa et al., 2017). This effect has been explored in three domains. The first one involves the decrease of loss and risk aversion when a foreign language is used. The second has to do with the reduction of deceptive associations because of the use of a foreign language and the third encompasses the idea that more utilitarian choices are being made when using a foreign language rather than a native language (Costa et al., 2017). An argument in favor of the FLe is that it has been found that some areas of the brain that are related to control processes are mobilized to a more considerable extent when processing a foreign than a native language (Branzi, Della Rosa, Canini, Costa, & Abutalebi, 2016). Keysar et al. (2012) claimed that there are two kinds of processes that seem to be triggered when someone thinks and mentally analyzes information. One is called "System 1" and the other "System 2". System 1 is more instinctive, emotive and heuristic while System 2 is more logical, rule governed and systematic. They argued that when using a native language, System 1 is triggered and System 2 is activated when a foreign language is used. According to their experiments, people, when making a decision, are more prone to obey to the rules of rationality if the decision problem is presented in a foreign language than when it is presented in their native tongue because of several factors that increase psychological detachment and encourage deliberation. Therefore, their deduction is that decision-making is affected by the use of a foreign language.

1.2.1 Emotionality

Over the years a plethora of studies has been conducted in order to investigate what is the possible factor that instigates the FLe and the subsequent decrease of the framing effect. Some researchers regard that the reason for the presence of the FLe is the lack of emotional load when using a foreign language. Others believe that it is the increase of the cognitive effort when using a foreign language that instigates this phenomenon. Others contemplate on the idea that both these claims may be correct simultaneously. Up until now a consensus has not been reached.

On the one hand, there are those who view that the emotional content existing in a native language is perceived differently in a foreign language. The emotionality rates are not as strong in a foreign language as in the native language and it is believed that this is the reason why the FLe appears since emotionality is viewed as the main factor promoting instinctive and not so rational choices – a phenomenon which is not found when the FLe appears.

Before moving on to studies that examined the FLe it is important to note the significance of emotions to the existence of the framing effect. More specifically, Nabi (2003) in his research discusses the relationship between framing and emotion. What is suggested is that distinct emotions can have discrete persuasive effects. Particularly emotions such as fear or anger can be said to guide information processing and therefore decision-making. Fear leads people to avoid taking risks in the name of protection while anger prompts people towards a behavior of approach in order to satisfy their sentiment for retribution. Thus, what Nabi argues is that emotions can function as frames and influence the making of decisions – especially in risk situations. So, the emotionality factor according to Nabi is essential when making decisions because emotions have the power to alter one's choices.

According to Hatzidaki' s (2016) study, emotional words, swear words or reprimands have a stronger impact and are used differently in a native language than in a foreign one. More specifically, Hatzidaki suggested that one of the reasons that a certain message can be more influential is when there is a negativity bias (emotionally negative words). The other reason being that a message is more influential when it is more related to the recipients than not –meaning that the individuals who are introduced to a message that concerns or interests them are more affected by the message than they would be if the message was not related to them. The final reason suggested in her study is that when the message is presented in the recipients' native tongue (L1) as opposed to a foreign (second) language (L2) the impact of the message is stronger.

Geipel et al.' s (2016) research also investigates the impact of the absence of emotions in a foreign language. The authors examine whether the intentions have the same weight as the outcomes in moral evaluations when someone uses a foreign language. They claim that morals can be altered according to the language of presentation of a decision problem. They suggest that people' s morals are intrinsically linked to their experiences (which were lived in their native language) and hence, to the emotions that such experiences trigger. What they argue is that a foreign language detaches people from their emotional load and subsequently the orbit of their moral judgement. As a result, a foreign language can be said to reduce the intuitions of the individual who makes a certain decision about a problem and place emphasis on the outcomes of that decision. Another suggested possible reason for the emphasis on ends over means is the escalation of the psychological distance when using a foreign language that paves the way to a more abstract level of understudying. This distance is said to focus the attention on ends over means and, as a consequence, to promote more utilitarian decisions. Thus, the reduction of emotionality, as far as this research is

concerned, plays a key role in the FLe since the impact of the emotional content that existed in the native language ceases to exist in the foreign and the decisions that are made are more utilitarian than intuitive.

There are also studies that suggest that the framing effect seems to be reduced when using a foreign language. One of these is Keysar et al.'s (2012) study. The authors argue that the framing effect is reduced in the foreign language because of the weak impact of emotionality in the foreign language and not because of the likely increase of cognitive effort as some believe (see Takemura, 2014; Winskel et al., 2016; Oganian et al., 2016) since the increase of the external load may appear to be a weakening factor of the systematic thinking because of the stress that such load produces. Furthermore, an emotional response sometimes encourages a less systematic choice. Therefore, decision-making in a foreign language, as Keysar et al.'s (2012) findings suggest, could lower the emotional resonance and subsequently lower the bias of framing. In overall, what Keysar et al.' s study suggests is that the factor that induces the FLe according to these authors is the decrease in emotional reaction that is related to the use of a foreign language.

Moreover, it has been discovered that the part of the human' s brain called amygdala which is responsible for human emotions is more stimulated when decisions are made in a native language; this increase is related to the framing effect (De Martino, Kumaran, Syemour, & Dolan, 2016), and this implies that this correlation is the result from a robust emotional lure to sure gains and a robust aversion to sure losses (Kahneman & Frederick, 2006).

Taking the above into consideration it can be argued that one's emotional responses could be decreased when using a foreign language and consequently the framing effect could also be reduced.

Hayakawa et al. (2016) claimed that the use of a foreign language has an impact on people' s choices. More specifically, that it is responsible for the reduction of various decision biases such as loss aversion. This means that when someone uses a foreign language and is about to make a decision, this individual will not be so averse to a possible loss than he would be if the same decision was made in the native language. Furthermore, they claim that the use of a foreign language is less sensitive to intentions and more sensitive to outcomes (which is what Geipel et al., [2016] have also proposed as stated above) and that it drives individuals to a more utilitarian perception (from a moral point of view).

In Hayakawa et al.' s research certain reasons are suggested for the perception that foreign language changes people' s choices and the framing effect seems to be reduced. One of them is that a foreign language absorbs emotions in a lesser amount than a native language. More specifically, a native language includes almost all the emotional lived experiences of a person, whereas the foreign language is associated with experiences acquired in a less emotional setting (e.g. classroom). This argument is analogous to the claims of Geipel et al. (2016) stated above.

However, Hayakawa et al. (2016) suggest that the incoherence of decisions (e.g. not choosing the safe option in a gain frame nor the risky option in a loss frame) when using a foreign language may be motivated by a decreased prominence of social norms rather than being the direct outcome of a reduction in emotionality. They reached this conclusion after regarding Geipel, Hadjichristidis, and Surian' s (2015) research results that involved the trolley (less emotional) and the footbridge (more emotional) dilemmas (i.e., hitting a switch, pushing a person off a bridge) that would harm an individual but as a consequence save five people. The results of this research indicated that the foreign language had an impact on the emotionality ratings of both dilemmas (they were rated

as less emotional), and that these ratings did not mediate the effect of language on choice.

Taking everything into consideration, these studies seem to view emotionality as the moving force behind the existence of the framing effect and the different perception/decrease of the emotional content of a message as the effect of the use of the foreign language which is not linked to people' s linked experiences and as a consequence it is more detached from people' s emotional system.

1.2.2 Cognitive effort

On the other side of the coin, there are those who view the use of a foreign language as the reason of the increase of the cognitive tension and that the latter is responsible for more utilitarian choices that disrupt the norm of choosing a safe option when there is a positive (gain) scenario and a risky option when there is a negative (loss) scenario.

In his study Takemura (2014) enumerates the different viewpoints that have surfaced over the years concerning the robustness of the framing effect when decisions have to be made together with or without justification. He claims that no common ground has been found to account for the robustness of the framing effect, but the conclusion that has been reached is that the framing effect appears to be less robust when engaging in cognitive elaboration. In other words, that the framing effect is not so apparent when an individual has to make a decision and justify it. This justification increases the cognitive effort. So, the cognitive effort seems to be the reason behind the reduction of the framing effect. The use of a foreign language is also said to promote cognitive tension (Costa et al., 2014) and have analogous results (reduction of the framing effect). Thus, the FLe can be associated with the increase of the cognitive effort when using a foreign language.

Furthermore, Rugaard and Johansson (2016) provided evidence for the differential working memory capacity in L1 and L2. They maintained – among other things – that making a decision in L2 is slower than making the same decision in L1. This "slowing" force could enhance the cognitive effort and as a consequence reduce the framing effect. Winskel et al. (2016) found that if a decision-making problem presented in a foreign language requires limited reading and language skills as well as rapid responses, then the framing effect will still be present in the foreign language because System 1 will be prompted. On the other hand, if a decision-making problem requires more reading and comprehension skills – and, hence, higher cognitive effort – then System 2 is triggered and the framing effect ceases to exist in the foreign language. Thus, according to their findings, the cognitive effort plays a key role in the FLe.

Oganian et al. (2016) also propose that the framing effect – when using a foreign language – is not reduced because of the emotional distance factor but because the use of a foreign language provokes temporary improvement of cognitive control. They used the Asian disease problem followed by a control problem, in which the expected values of the two options differed. Their findings (Experiment 1) seem to disprove the emotional distance scenario which is considered accountable for the FLe since they indicate that the level of proficiency (even if it is native-like) does not play any role in the existence of the framing effect as Pavlenko (2012) proposed in her study. Furthermore, their results found a framing effect in both the native and the foreign language condition and thus did not reproduce previous findings (Oganian et al., 2016: 10). Fernandez, Höhle, Brock, and Nickels (2016) arrived to a somewhat analogous conclusion. The findings of their study seem to indicate that non-native speakers' comprehension of L2 is similar to native speakers' comprehension of L1.

1.2.3 Emotionality and Cognitive effort

However, some researchers stand somewhere in the middle. Schuck and Feinholdt (2015) argue that cognitive processes such as accessibility change (i.e. making considerations more noticeable and likely to be used), belief importance change (i.e. modifying the weight of certain considerations) or belief content change (i.e. adding new beliefs) along with affective factors could explain the framing effect because, according to their view, affective factors constitute the missing piece of the puzzle of the framing effect. Costa et al. (2014) in their first three studies suggest that the role of emotionality is connected with the framing effect. The results of their studies indicated that when presenting problems in a foreign language several heuristic biases were diminished and this decrease in biases could be one of the results of the decrease in emotionality in a foreign language. However, Costa et al. (2014) seem skeptical about the role of cognitive tension. Their last study that explored to what extend decision-making is affected by the use of a foreign language when a certain decision has to be made showed that there are some boundaries to the FLe since it is absent in logical problems that do not involve an emotional component. Thus, the authors do not exclude the possibility that the FLe does not necessarily require a decrease in emotionality. They maintain that it could be due to an advancement of a more rational and logical processing irrespective of the emotionality of the problem. Thus, what their findings seem to suggest is that the modulation in the framing effect does not occur (only) because of the absence of emotionality, but (also) because of the advancement of cognitive processing when using a foreign language.

1.3 Theme-Rheme function

According to Sapir (as cited in Pavlenko, 2014), the language habits of someone's community influence how certain choices are interpreted and subsequently how people see, hear and experience in general. Whorf (as cited in Pavlenko, 2014) tried to be more specific and claimed that people who use distinctly different grammars are led by these grammars to make different observations and appraisals of certain facts or stimuli that are considered similar externally. Thus, Whorf claimed that people who use different grammars are "urged" by these grammars to make different observations of the world and different evaluations of what seems externally similar. As a consequence, their observations are not analogous and they view the world differently. These viewpoints formed what was later called *linguistic relativity* or the *Whorfian hypothesis* or the *Sapir-Whorf hypothesis* (e.g. Hoijer, 1954b and Brown & Lenneberg, 1954 as cited in Pavlenko, 2014).

The three basic ideas that linguistic relativity embraces are the following: One idea is that word meanings and syntactic constructions can differ to a great extent among languages. Another idea is that the way in which speakers of a language view the world is influenced by the semantics of their language and the extreme position of this idea is that semantics not only influence how speakers perceive and conceptualize the world, but also the way people's thoughts are shaped – a position known as *linguistic determinism*. The third idea embraced by linguistic relativity is that people who speak different languages – given that language affects thinking – think differently (Wolff & Holmes, 2011). Chafe (as cited in Butler, 2005) also contemplates on the relation between language – and more specifically grammar – and thought. He claims that there is no direct relation between grammar and thought but there is one between

thought and semantic structure. In this light, different languages provide different semantic resources to their speakers, which, in turn, affect speakers' thoughts.

This perception of language shaping the way people think could also play a role in decision making and the framing effect. This perception could also be related to the FLe since it affects the way people make choices because of the use of a foreign language.

Moving on to the categorization of languages according to their word order, Tzartzanos (as cited in Lascaratou, 1998) classified Modern Greek as a language with a flexible word order – Subject Verb Object (SVO) being the basic order in main declarative clauses and Verb Subject Object (VSO) the usual order in most other cases). It is suggested that the normal order, "when the speech is calm and free of passion", (Lascaratou, 1998: 153) of an active independent declarative clause in Greek is SVO and that if the verb is the element carrying emphatic stress then the SVO may be replaced by the VSO order according to Tzartzanos (as cited in Lascaratou, 1998). This is found in contrast with the prosodic speech where the constituent found at the end of the sentence has the main stress in a neutral intonation (Georgiafentis, 2001).

Many researchers have been investigating the spectrum of word order over the years (see Lascaratou, 1998; Georgiafentis, 2001; Georgiafentis & Lascaratou, 2013a, 2013b). More specifically, Georgiafentis and Lascaratou (2013a) conducted a study that explored the conception of adjacency regarding the variation of word order in several Verb Phrase (VP) structures. Their hypothesis was that there are certain factors (syntactic and/ or lexical/semantic dependency relations and constituent length) that coexist in a clause and create tension. This tension among the competing factors elicits specific linearization patterns. Despite the force of the constituent length, they argue that syntactic and/or lexical/semantic relations are the instigators of the natural

adjacency of elements which, on a theoretical level, "belong together". On the force of the constituent length, Georgiafentis and Lascaratou (2013b) comment that the domains of minimal length are preferred over domains with bigger/maximum length and that is the reason why simultaneous processing and working memory load are also minimized in domains of minimal length. Hence, people choose to process linguistic forms in domains of minimal length and this preference is what principally encourages adjacency effects. Thus, according to their findings, the way sentences are ordered in a language is the result of a competition between syntax and/or semantics and constituent length. This is an important finding since the present study explores the role of syntax (more specifically word order) in Greek and how the syntax interacts with semantics ("heavy" meanings of emotional words), as well as the effect this interaction has on the framing effect.

Word order can be described on a grammatical-syntactic level in terms of two functions, theme and rheme. Cummings (as cited in Butler, 2005) noted that the Prague School was the first to propose the distinction between theme and rheme which was then adopted by Systemic Functional Linguistics (SFL). Tzartzanos (as cited in Lascaratou, 1998) following the precepts of the Prague School theory of Functional Sentence Perspective, also supports the idea that theme preceding rheme in a neutral sentence structure constitutes the objective order and rheme preceding theme in an emphatic structure constitutes the subjective order. Summing up the above information, it can be argued that Greek is a language with a flexible word order but the factors determining its order vary (adjacency, emphatic stress, syntax and semantics).

As previously mentioned, a lot of variations exist among languages –word order of clause structures being one of them. Some languages, such as Greek, are said to have "free" or "flexible" word order, while others "fixed" word order (e.g. English is said to

have a fixed SVO word order; Rose, 2001). According to Halliday (as cited in Forey, 2002: 47) at a lexico-grammatical level exist three metafunctions: the ideational, the interpersonal, and the textual. The first "constructs a model of experience", the second enacts social relationships, and the third creates "relevance to context".

Regarding the third metafunction, Halliday later on (as cited in Belmonte & McCabe-Hidalgo, 1998: 15) stated that "the textual function of the clause is that of constructing a message and the theme/rheme structure is the 'basic form of the organization of the clause as message". From a grammatical/syntactic point of view, the word structure of the clause is divided – as mentioned above – into two functions: theme and rheme. Many definitions have been given over the years that are more or less the same. Dejica-Cartis and Cozma (2013: 891) propose that "each sentence contours one element which is more important or central to the discourse and which is called theme, and another element which develops the theme and is called rheme". "The theme is assigned initial position in the clause, and all that follows is the rheme […] Theme is concerned with the information structure of the clause; with the status of the elements as components of a message; with the relation of what is being said to what has gone before in the discourse, and its internal organization into an act of communication […] The theme is what is being talked about, the point of departure for the clause as a message; and the speaker has within certain limits the option of selecting any element in the clause as thematic. As often in this area of the grammar, however, one of the options is unmarked, and the identification of the unmarked option provides a useful insight into the meaning of the theme-rheme structure as a whole" (Halliday, 1967: 199).

Later on, Halliday gave a similar definition concerning the English language: "Theme and rheme are functions assigned to constituents of the clause, the central

grammatical unit. For English, the theme, or starting point for the message, can basically be identified with what comes in first position in the clause (Halliday, 2004: 64). Another linguist, Martin (as cited in Forey, 2002: 49) suggests that what is placed first in a sentence is a choice that is seen as a "textual resource systematically exploited" so as to result in diverse patterns. These different patterns and the meanings conveyed by these patterns can be manipulated by the writer to provide their personal viewpoint. The same view is shared by Sanz (2000). He states that the function of the theme is not restricted to being solely a spatial metaphor. According to Sanz, the theme orients the message of the utterance and its choice is meaningful since it forms and regulates how the message is conceived by the addressee.

Halliday (2004) refers to one category of complex structure (hypotaxis/conditional clauses) which includes a dominant clause (Head), and a dependent clause (Modifying). He claims that the typical ordering in such a clause complex is Head + Modifying, but he acknowledges that the reverse (Modifying + Head) is possible, too. Thus, according to Halliday, the structure of the dominant clause preceding the dependent clause is considered unmarked. Opposing views regarding markedness of conditional clauses have emerged over the years. Some depart from Halliday' s viewpoint and claim that 'subordinate + main' is the unmarked order (see Downing & Locke, 2006). Sanz (2000) maintains Halliday' s direction over markedness and asserts that the thematization of a dependent clause mitigates the force of the message that the main clause carries. Forey (2002), in his thesis paper states that according to Halliday (1994: 37), a conditional complex clause with the dependent clause preceding the dominant is the theme while the independent clause is the Rheme. However, other SFL scholars suggest that the theme should be extended from the beginning of the dependent clause up to, and including, the Subject of the independent

clause (see Davies, 1988, 1994, 1997; Matthiessen, 1992; Berry, 1995; Ravelli, 1995; Martin & Rose, 2003 as cited in Forey, 2002). When including the Subject into the extended theme it is easier to observe its thematic development. Therefore, in a clause complex where the dependent clause (β) is placed first, i.e., a beta^alpha structure, the theme is considered to include the beta clause plus the subject of the independent clause and the rest of the independent clause constitutes the rheme. This is what is called "extended theme" (Forey, 2002). The concept of the extended theme is also suggested by Cummings (as cited in Butler, 2005).

Overall, one could argue that the theme is what is talked about and the rheme provides information about what is talked about and that the theme usually precedes the rheme (especially in fixed word order structures). However, there are instances of the rheme preceding the theme in languages of flexible/free word order (such as Greek). The reasons, as previously pointed out, vary (emphasis, adjacency, length, syntactic preferences).

The theme and rheme concepts are essential in this study because they are the ones which are going to be manipulated in order to examine whether the placement of the rheme in the initial position of a sentence modulates the framing effect. More specifically, whether the use of an emotional word in rheme position will augment the framing effect in the native language.

1.4 The present study: Hypotheses

Taking everything into consideration, the research hypotheses that guided the present study are the following:

1. The framing effect, that is the preference of a safe option in a positive (gain) frame scenario and the preference of a risky option in a negative (loss) frame scenario, will appear in participants' native language.
2. The framing effect will be reduced in the foreign language. That is the foreign language will instigate more systematic and logical choices and hence the FLe will appear.
3. The framing effect may be modulated when the position of the theme and rheme changes. More specifically, the framing effect may be stronger when emotional content presented as the rheme precedes the theme.

The present study

2. Method

The present study's goal was to replicate the framing effect in a native language not studied before (L1-Greek), to find the FLe when comparing the magnitude of the framing effect in a native (L1) vs. a second language (L2), and explore whether the framing effect might be influenced by theme-rheme order changes. To this end a text with the Asian Disease problem was given in a positive (gains) or negative (losses) frame and participants had to choose one of two options offered to them.

2.1. Participants

Two hundred forty-two participants (28 males) took part in the experiment. One hundred and one of them performed the task in their L2 (foreign language condition; gain frame version, $N = 55$; loss frame version, $N = 46$) and the rest performed the task

in their L1 (native language condition). From the ones that performed the task in their L1, seventy-three completed the version where theme was placed first (Theme 1 condition; gain frame version, *N*= 38; loss frame version, *N*= 35), and sixty-eight completed the version where theme was placed after the rheme (Theme 2 condition; gain frame version, *N*= 34; loss frame version, *N*= 34).

All the participants were students in the Department of English Language and Literature at the National and Kapodistrian University of Athens (Greece). The participants were from the 1st 3rd, 5th and 7th semester of their undergraduate studies. The ones that completed the handout with the English text were from the 1st semester of their undergraduate studies. They also had to fill in a questionnaire on the front page of the handout that was given to them along with the text with the Asian Disease problem regarding their speaking, writing, reading, and listening skills of the language in question, their age, their years of studies in Higher Education, the age of acquisition (AoA) of the L2, whether or not they had obtained a degree in English (L2 texts only) and whether or not they had any kind of language learning difficulties (see Appendix B and Tables 1, 2 and 3 for each group's characteristics). This information was essential for the experiment because the aim was to gather participants that belong – more or less – to the same category. According to Pavlenko (2012) putting together populations with different characteristics and treating them as a homogeneous population is problematic, mainly because of the noise that will be created which will negatively affect the disambiguation of the data. That is the reason why participants who did not conform with the precepts of this study (e.g., whose English was not their L2 or whose Greek was not their L1) were excluded from the experiment. Specifically, from the ones who completed the task in English 19 were excluded and from the participants who completed the task in Greek 10 were excluded.

Table 1: English language skills of the participants who completed the task in English.

Language skills about English

	N	Minimum	Maximum	Mean	Std. Deviation
Reading	101	4	7	5,59	,737
Listening	101	3	7	5,70	,855
Writing	101	3	7	5,20	,906
Oral	101	2	7	5,25	1,043
Valid N (listwise)	101				

Table 2: Greek language skills of the participants who completed the task in Greek with Theme 1.

Language skills about Greek with Theme 1

	N	Minimum	Maximum	Mean	Std. Deviation
Reading	73	4	7	6,71	,565
Listening	73	6	7	6,88	,331
Writing	73	4	7	6,21	,799
Oral	73	5	7	6,59	,642
Valid N (listwise)	73				

Table 3: Greek language skills of the participants who completed the task in Greek with Theme 2.

Language skills about Greek with Theme 2

	N	Minimum	Maximum	Mean	Std. Deviation
Reading	68	5	7	6,75	,469
Listening	68	5	7	6,85	,396
Writing	68	5	7	6,34	,660
Oral	68	4	7	6,43	,798
Valid N (listwise)	68				

2.2. Materials

The materials (see Appendix A) which were originally written in English (Keysar at al., 2012; Costa et al., 2014) were translated into Greek and then back-translated into English by two English-Greek bilingual speakers (Brislin, 1970). The study was conducted in different classrooms of more or less forty undergraduate students of the English Department of the National and Kapodistrian University of Athens (Greece) at a short time-period of time (24/10/2018 - 12/11/2018). As previously stated, the English version of the Asian disease problem corresponds to the version Keysar et al. (2012) and Costa et al. (2014) used in their studies. The translated version of the problem into Greek is the following:

> Πρόσφατα, μία επικίνδυνη νέα ασθένεια κυκλοφόρησε. Χωρίς φάρμακο, 600.000 άνθρωποι θα πεθάνουν από αυτήν. Προκειμένου να σωθούν αυτοί οι άνθρωποι, δύο τύποι φαρμάκων έχουν φτιαχτεί.
>
> *Πλαίσιο κερδών*
>
> Αν διαλέξεις το Φάρμακο Α, **200.000 άνθρωποι** *θα σωθούν*.
>
> Αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες **600.000 άνθρωποι** *να σωθούν* και 66,6% πιθανότητες **κανένας** *να μη σωθεί*.
>
> Ποιο φάρμακο διαλέγεις;
>
> *Πλαίσιο ζημιών*
>
> Αν διαλέξεις το Φάρμακο Α, **400.000 άνθρωποι** *θα πεθάνουν*.
>
> Αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες **κανένας** *να μην πεθάνει* και 66,6% πιθανότητες **600.000 άνθρωποι** *να πεθάνουν*.
>
> Ποιο φάρμακο διαλέγεις;

The words in bold are the themes and the ones in italic are the rhemes. The other Greek version of the problem contains the difference in the theme order. In the Theme 2 condition, since Greek is a flexible word-order language, the rheme precedes the theme and the problem is presented as follows:

> Πρόσφατα, μία επικίνδυνη νέα ασθένεια κυκλοφόρησε. Χωρίς φάρμακο, 600.000 άνθρωποι θα πεθάνουν από αυτήν. Προκειμένου να σωθούν αυτοί οι άνθρωποι, δύο τύποι φαρμάκων έχουν φτιαχτεί.
>
> *Πλαίσιο κερδών*
>
> Αν διαλέξεις το Φάρμακο Α, *θα σωθούν* **200.000 άνθρωποι.**
>
> Αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες *να σωθούν* **600.000 άνθρωποι** και 66,6% πιθανότητες *να μη σωθεί* **κανένας**.
>
> Ποιο φάρμακο διαλέγεις;
>
> *Πλαίσιο ζημιών*
>
> Αν διαλέξεις το Φάρμακο Α, *θα πεθάνουν* **400.000 άνθρωποι**.
>
> Αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες *να μην πεθάνει* **κανένας** και 66,6% πιθανότητες *να πεθάνουν* **600.000 άνθρωποι .**
>
> Ποιο φάρμακο διαλέγεις;

It is important to note that the changes in the theme-rheme position were applied in both the gain frame and the loss frame scenarios. The description in the beginning of the text, as in the original English version, remained the same in both frames. What changed in the original (and in the translation) was the “choice” scenario. Thus, the

manipulation of theme and rheme involved what was different across the two scenarios, not what was the same. In other words, the prologue of the deep structure remained as it was (in terms of theme order). The theme order of the options of the deep structure changed (in both positive and negative frames). It must be noted that the translation of "a dangerous new disease" into "μία επικίνδυνη νέα ασθένεια" does not follow the Greek grammar and sounds a bit odd. However, since the goal was to stay as close as possible to the original text so as to be confident that the findings of the present study would be due to the specific manipulations and not to other uncontrolled factors, the English syntax was followed in the Greek version with regard to this point in the text. Furthermore, the translation of "are being made" into "έχουν φτιαχτεί" would be better with "έχουν παρασκευαστεί" which means "have been manufactured". But, since a word in English already exists ("manufactured") and was not used, the verb "έχουν φτιαχτεί" was selected so as to stay as close to the original as possible.

A last remark concerns the change in the Theme-Rheme. According to Halliday (2004) in a clause complex (conditional) the dependent clause – if it is placed first (marked) – is considered to be the theme, and the independent the rheme and then the rheme can be further analyzed into theme and rheme. Other researchers and academics (see Davies, 1988, 1994, 1997; Matthiessen, 1992; Berry, 1995; Ravelli, 1995; Martin & Rose, 2003 as cited in Forey, 2002) have proposed for the theme to be extended up to – and including – the subject of the dominant clause. An example of the latter claim is shown below (Examples 1 and 2).

(1)

Αν διαλέξεις το Φάρμακο Α, 200.000 άνθρωποι	θα σωθούν.
If you choose Medicine A. 200,000 people	will be saved
Theme (dependent clause + Subject of independent)	Rheme

(2)

Αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες 600.000 άνθρωποι		
If you choose Medicine B, there is a 33.3 % chance that 600,000 people		
Theme (dependent clause + [up to] Subject of independent clause)		
να σωθούν	και 66,6% πιθανότητες κανένας	να μη σωθεί.
will be saved	and a 66.6% chance that no one	will be saved
Rheme	Theme (existential + Subject)	Rheme

Although this syntax does not seem problematic, it becomes problematic when the theme-rheme changes. In the case where theme is placed after the rheme, the extended theme seems to be disrupted by the rheme (see Example 3 below).

(3)

Αν διαλέξεις το Φάρμακο Α,	θα σωθούν	200.000 άνθρωποι.
If you choose Medicine A,	will be saved	200,000 people.
Extended theme (dependent)	Rheme	Extended theme (Subject)
	Extended theme	

This syntactic explanation may be considered correct but it seems rather problematic for the purposes of this study since the dependent clause along with the subject of the independent clause cannot be placed after the rheme because this would sound rather odd in Greek and especially in option B it sounds ungrammatical (e.g. *να σωθούν αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες 600.000 άνθρωποι και να μη σωθεί 66,6% πιθανότητες κανένας). For this reason, Halliday's syntax will be followed. (see Examples 4 and 5 below).

(4)

Αν διαλέξεις το Φάρμακο Α,	θα σωθούν	200.000 άνθρωποι.
If you choose Medicine A,	will be saved	200,000 people.

		Rheme	Theme	
	Theme		Rheme	
(5)				
	Αν διαλέξεις το Φάρμακο Β,	υπάρχουν 33,3% πιθανότητες	να σωθούν	
	If you choose Medicine B,	there is a 33.3% chance that	will be saved	
		Existential theme	Rheme	
	Theme		Rheme	
	600.000 άνθρωποι	και 66,6% πιθανότητες	να μη σωθεί	κανένας.
	600,000 people	and a 66.6% chance that	will be saved	no one.
	Theme	Existential theme	Rheme	Theme
		Rheme(continues)		

2.3. Procedure

The experiment took place in classrooms of the National and Kapodistrian University of Athens (Greece) with students from the English Department of Language and Literature of the National and Kapodistrian University of Athens (Greece). Participants were presented with only one version of the problem (English or Greek) and they were randomly assigned each version of the problem. Thus, the students with the English text were randomly given the positive (gain) or the negative (loss) frame and the students with the Greek text were randomly given the four versions of the Greek text; some received the positive (gain) frame with Theme 1, others the positive (gain) frame with Theme 2, others the negative (loss) frame with Theme 1, and others the negative (loss) frame with Theme 2. Prior to reading the text, participants were asked to fill in a questionnaire on the front page regarding their personal information (age, sex, proficiency level, language learning difficulties etc.). At the back of the page there was the text with the Asian disease problem. Participants were asked to read it and circle the option they believed was “right” for them. They were notified that there was no correct option and that any inconsistencies with their classmates should not be taken

into consideration (in case they tried to compare their answers with each other). The whole procedure lasted from 6 to 8 minutes for the English text and from 5 to 6 minutes for the Greek text.

2.4. Results

A loglinear analysis was performed because this study sought to examine whether there are relations between the categorical variables employed here. Thus, the frequencies of these categorical variables were calculated (Field, 2009). The alpha level of .05 was used for all the statistical tests.

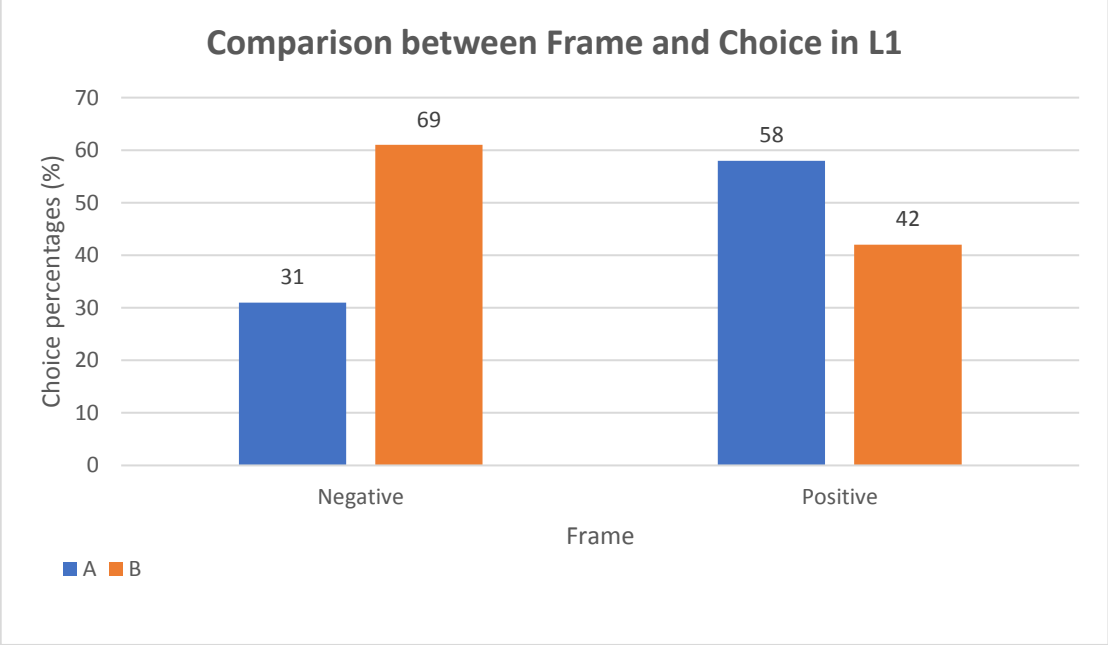
It is essential to note that two analyses took place so as to accommodate the different theme orders in the Greek texts. More specifically, the first analysis (Frame, Language, and Choice) dealt with the relationship of three categorical variables, namely the frame of the problem (positive or negative), the language of the text the problem was presented (L1-Greek or L2-English), and the choice of the participants (A or B). In this analysis, the texts in Greek and English presented the theme in the typical position (Halliday, 2004), preceding the rheme. The reason for this was that there should be homogeneity in the texts' theme order and that the only difference should be the language in which they were presented so as to have a clear view of whether the L1 or the L2 makes a difference in the participants' choices.

The loglinear analysis showed that the three-way interaction among the frame (positive or negative), the language of the text (L1-Greek or L2-English) and the choice participants made (A or B) was not significant: χ^2 (1) = .075, p = .784. However, when breaking down the three-way interaction, the results showed that at least one or more of the two-way interactions were significant. Of these, the language of the text by frame interaction was not significant, $\chi^2(1) = .014$, p = .906, nor was the language of the text

by choice interaction, χ^2 (1) = .585, p = .444. Hence, there seemed to be no relationship between the language of the text and the frame or the language of the text and participants' choices. However, the interaction between frame and choice was significant, χ^2 (1) = 10.355, p = .001, and further looking at this effect in each language group it was found that it was quite similar; χ^2 (1) = 5.152, p = .023 in L1-Greek and χ^2 (1) = 5.162, p = .023 in L2-English, respectively.

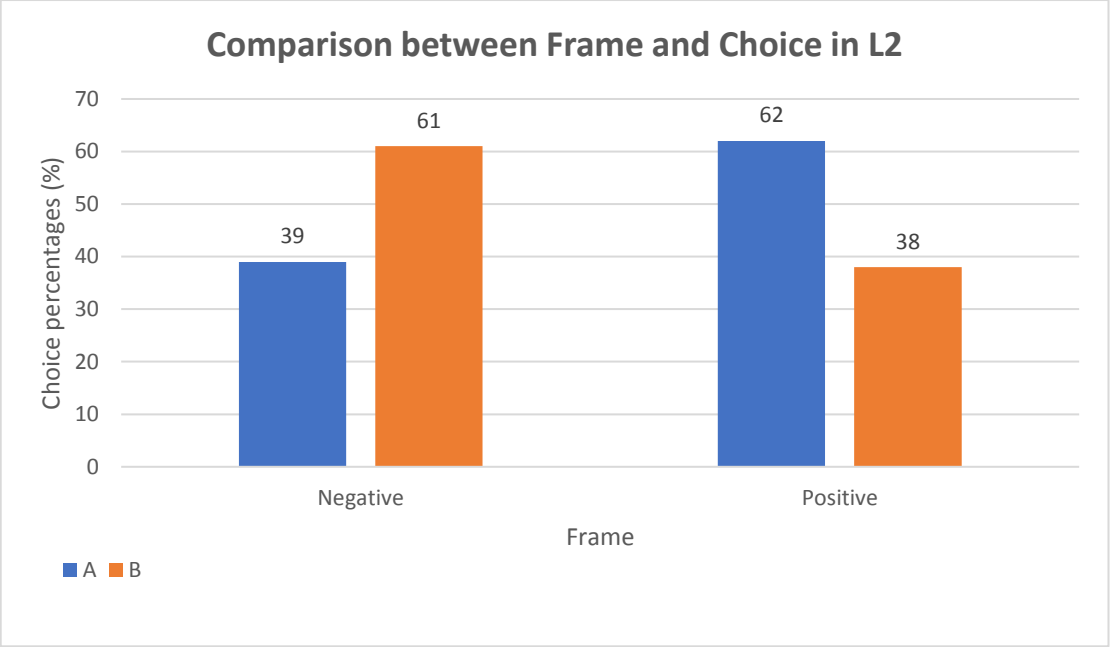
More specifically, 58% who were given the L1-Greek text chose option A and 42% chose option B when they were presented with a positive frame (see Table 4).

Table 4: Comparison between Frame and Choice in L1.



Equally high, 62%, was the percentage of the participants with the L2-English text who chose option A in the positive frame scenario as opposed to option B, 38%. (see Table 5).

Table 5: Comparison between Frame and Choice in L2.



The odds ratio showed that participants in L1-Greek were 2.99 times more likely to choose Medicine A in a positive (gain) scenario than in a negative (loss) scenario, and participants in L2-English were 2.52 times more likely to do that.

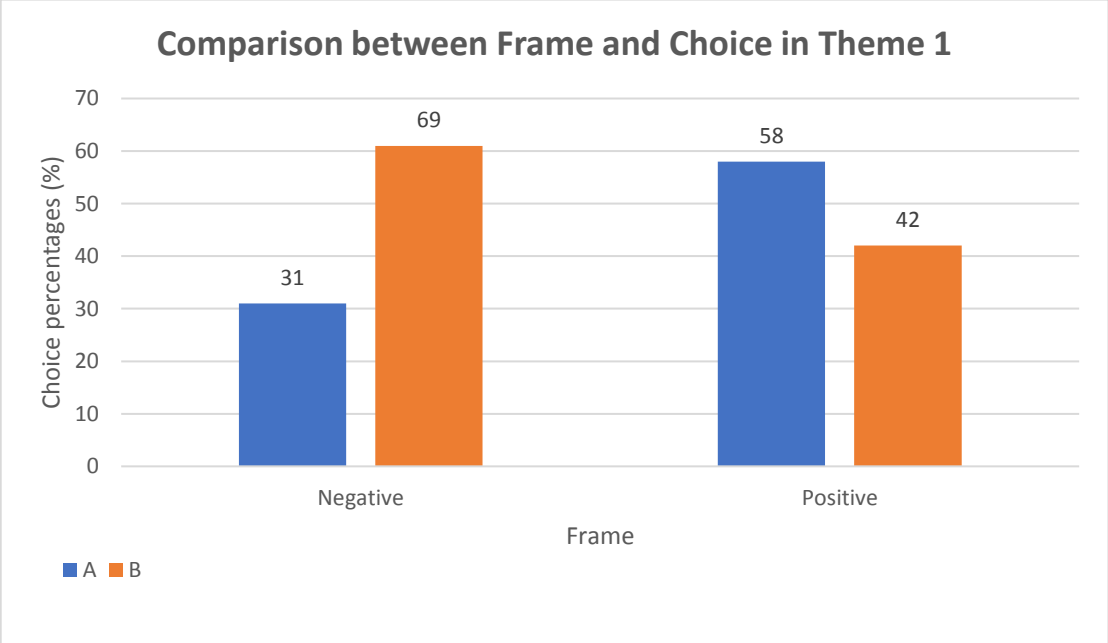
The second analysis (Frame, Theme order, and Choice) explored the relationship of three categorial variables, namely the frame of the problem (positive or negative), the order of theme presentation (Theme 1 or Theme 2), as well as the choice of the participants (A or B). Thus, only the Greek texts were included in this analysis.

The loglinear analysis showed that the three-way interaction among the frame (positive or negative), the theme order (Theme 1 or Theme 2), and the choice participants made (A or B) was not significant. χ^2 (1) = .022, p = .882. However, when breaking down the three-way interaction, the results showed that at least one or more of the two-way interactions were significant. Of these, the theme order by frame interaction was not significant, $\chi^2(1) = .016$, p = .900, nor was the theme order by choice

interaction, χ^2 (1) = .189, p = .664. In other words, it was shown that there was no relationship between the order of theme and the kind of frame presented nor between the order of the theme and the choices of the participants. However, the interaction that was found to be significant was the one between frame and choice, $\chi^2(1) = 9.132$, p = .003, and further looking at this effect in each theme order it was found that it was rather similar; χ^2 (1) = 5.152, p = .023 in Theme 1 and χ^2 (1) = 3.886, p = .049 in Theme 2, respectively.

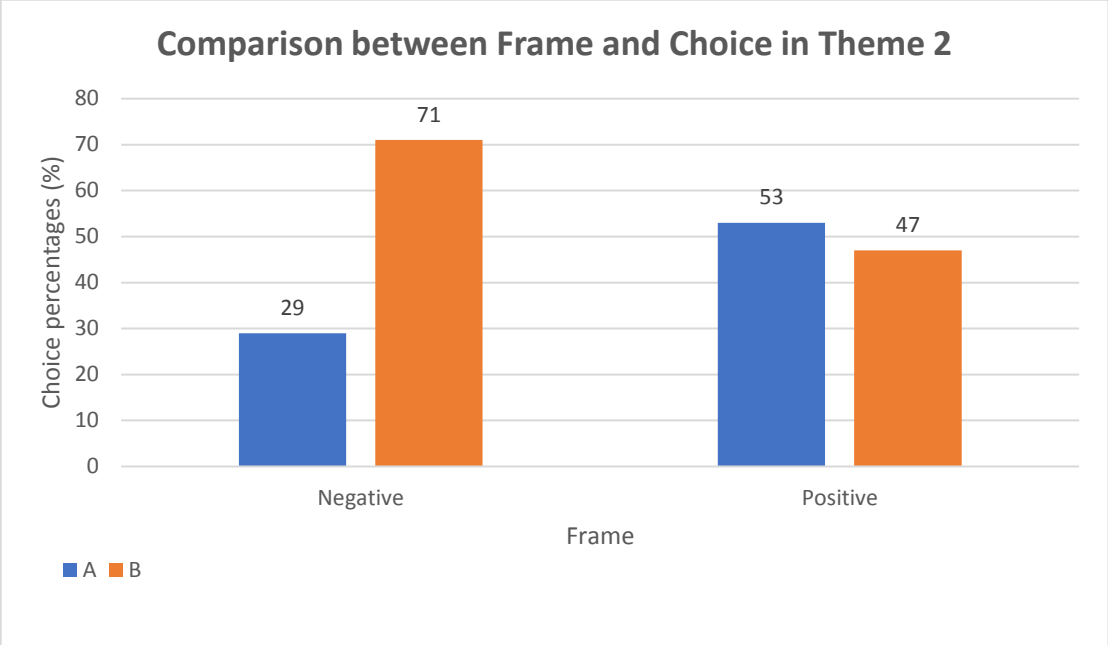
More specifically, 58% of the participants who were presented with the problem having the theme in first position (Theme 1) chose option A and 42% chose option B in a positive (gain) frame (see Table 6 below).

Table 6: Comparison between Frame and Choice in Theme 1.



Equally, 53% of the participants who were presented with the problem having the theme in second position (Theme 2) chose option A and 47% chose option B in a positive (gain) frame. (see Table 7 below).

Table 7: Comparison between Frame and Choice in Theme 2.



On the odds ratio, participants with Theme 1 were 2.99 times more likely to choose Medicine A in a positive (gain) scenario than in a negative (loss) scenario, and participants with Theme 2 were 2.70 times more likely to do that.

All three groups (the group that received the English text, the group that received the Greek text with Theme 1, and the group that received the Greek text with Theme 2) opted for the safe choice (Medicine A) when they were presented with the positive (gain) frame. However, when they were presented with the negative (loss) frame, the majority chose Medicine B which was the risky option. Thus, all three groups showed the framing effect regarding loss aversion. Contrary to our prediction, the results showed that the language in which the text was presented did not affect the participants' choices and consequently it suggested that the language of the text was not relevant to the choice participants made in each frame. Furthermore, the hypothesis that the theme order of the sentences in the Greek text might modulate the framing effect was not confirmed either. Thus, the order of the theme in a sentence – whether

placed first or second in relation to the rheme – was not related to the choices participants made after reading the Asian disease problem in each frame.

Discussion

3. Predictions

In the present study it was observed that the framing effect was present in all the three categories of participants, namely the ones who performed the task in English-L2 and the ones who performed the task in Greek-L1 with the theme placed either before or after the rheme. What is outstanding is that all three participant categories showed the framing effect. The expected outcome was to find a framing effect only in the Greek text, the absence of which was anticipated in the text written in the foreign language (English). Furthermore, the framing effect was expected to be modulated when the theme in the Greek text was placed second but this did not occur.

3.1. Frame, Language, and Choice

3.1.1. Expected framing effect in native language

As far as the Greek text is concerned, the framing effect was replicated as in previous studies that have been conducted over the years testing languages such as English, Korean, Spanish, Arab and Serbian (see Keysar et al., 2012; Costa et al., 2014; Gvozdenovic and Damnjanovic, 2016). Participants reading a text in their native

language (in this study Greek) tend to change their choices according to the framing of the problem. In other words, they tend to be risk averse when they are presented with a positive (gain) frame scenario and, hence, choose the option that offers sure gains (option A) and choose option B when they are presented with a negative (loss) frame scenario in which case, they tend to be risk seeking. If this effect of framing did not exist then participants would obey to the precepts of rationality and would be consistent in their choices. For example, if the framing of the problem was presented as a loss scenario, they would still choose option A because they would think in terms of outcomes and what is safer and utilitarian at the same time. Choosing the risky option (option B) could result in losing everything which is contradictory to the rationality principles. However, the framing effect "disturbs" any rational choices in people' s minds and incites them to be risk seeking when they are presented with a loss frame scenario. More or less, most people are willing to take risks if they feel that they might lose something or someone. Still, they are not willing to take risks when they believe they have sure gains. It is like telling someone that they will surely gain a certain amount of money or that there is the choice of gaining more or nothing. People in such situations prefer the safe option. However, if someone is told that they will surely lose a certain amount of money or that they have the option of losing more or nothing at all, it is more likely that this person will take the risk in order not to lose anything. Gaining is pleasant but losing is not and the aversion to loss is stronger than the pursuit of gaining (Tversky & Kahneman, 1986).

3.1.2. Unexpected appearance of framing effect in foreign language

Despite the fact that the framing effect shows consistently in the native language as opposed to a second or foreign language, this study showed that it appears in the foreign

language, too. This, in turn, vitiates the Foreign Language effect (FLe) which presupposes that the framing effect is reduced or does not show when a certain problem is presented in a foreign language. This finding is unusual but it has been yielded in other studies too. Oganian et al. (2016) were the first to find a strong framing effect not only in the native language (German) but also in the foreign languages (English, French). Their prediction was that, because of the emotional distance, the framing effect would be reduced at low proficiency levels as opposed to high proficiency ones. However, their results did not show any modulation in the framing effect according to proficiency. Nevertheless, they claimed that the reduced framing effect in a foreign language may be the result of a temporary improvement of cognitive control. They came to this conclusion after they conducted an experiment not with a change in language per se but with language switching (alternation between two languages in the context of a single sentence or phrase) during their experiment. Another study by Fernandez et al. (2016) showed that the comprehension of a native language is similar to the comprehension of a speaker's second language. They conducted an experiment using pupillometry, a method that measures processing costs during the processing of language constructions by measuring eye movements during the processing of gap sites in an auditory presentation. The results of their experiment showed that both groups (the group who conducted the experiment in the native language and the one who conducted the experiment in the foreign language) showed similar facilitation during the processing at the final gap site. This adds to the fact that there might not exist so many differences between the native and the foreign language as some claim or that there are factors that disrupt the FLe by making the L2 resemble in terms of characteristics the L1.

One of the factors that may have played a crucial role in the appearance of the framing effect in the foreign language and is important to be highlighted is that this experiment involved Greek participants. From a geographical and sociological point of view Greece is a country that attracts a lot of tourists and is based heavily on tourism. Actually, about 16% of the Gross Domestic Product (GDP) of Greece is "charged" on tourism ("Tourism in Greece", 2018). Furthermore, Greece receives 3% of the international tourism in Europe ("Tourism in Greece", 2018). Thus, tourist industry plays a pivotal role in the economic welfare of Greece. According to Chasapopoulos, Butter, and Mihaylov (2014), the industry of tourism supports 18.4% of the total employment in Greece. The authors also assert that trade is crucial for the Greek market since it reduces the cultural distance of Greece and other countries, as well as informs tourists about Greece itself and renders it a possible holiday destination. Thus, Greeks have a personal interest in tourism and it is imperative for them to communicate with people from other countries in the lingua franca – English, since English has been chosen as the language that would serve as a common means of communication for speakers of different languages. This, in addition to tourism and trade, renders English a very important language for Greeks since it is the language that more or less provides for them. One can argue that because of the need of English in Greece, English proficiency levels have reached nowadays almost the native-like levels of Greek. In addition to that, it is essential to note that all the participants of the present study had started learning English at the age of approximately seven years old. Thus, their contact with the English language has been continuous and lengthy. This may partially account for the fact that in the present study there was no difference in the framing effect when the Greek participants were given the English version of the text.

Another possible factor accounting for the absence of the FLe is that the students who participated in the experiment came from the Department of English Language and Literature of the National and Kapodistrian University of Athens (Greece). This presupposes automatically that the contact the participants have with the English language is greater than the contact other students might have if the study used undergraduates from another Department. Yet, as previously mentioned, the reason for choosing only 1st year students to participate in the experiment in English was to mitigate this effect. However, the fact that one chooses to enter the faculty of English Language and Literature might signify that these students have a certain bond with or love for this language which is greater than what would be expected for other languages. Moreover, even in the first year of studies, almost all the courses of the semester are delivered in English. Thus, these students spend about half of their day being integrated in an English environment if one considers that apart from the English classes at University, they also have to study at home, too. Consequently, they "intermingle" with the English language not only because they want to, but also because they have to (since they study it). This "intermingling" gives English characteristics that approach a native-like condition for these particular participants. Since English can be argued to have native-like characteristics, it can also be claimed that it will incite what the Greek language does, namely the domains responsible for emotionality and cognitive control. Therefore, the expected decrease in emotionality and the expected increase in cognitive effort when using a foreign language might not occur. Instead, the levels of emotionality might stay high – as in the case of the use of the Greek language – and there might not be so much cognitive effort on the part of the participants. The decrease in emotionality and the increase in cognitive control, as it has already been discussed, are two factors held responsible for the existence of the FLe. Since these factors might no longer apply,

it is reasonable to assume that the FLe might not be present when the English problem is given to the Greek students of English Language and Literature of the National and Kapodistrian University of Athens (Greece).

3.2. Frame, Theme order, and Choice

3.2.1. Expected framing effect in native language

In this analysis, only Greek texts were used. Their difference lied in the theme order. Almost half of the Greek texts (73) had the theme placed before the rheme and the rest (68) had the theme following the rheme. As the texts were in Greek (native language condition), the framing effect was expected to be and was present. When there was a positive (gain) frame scenario, the safe option (option A) was chosen more than the risky option (option B), whereas when there was a negative (loss) frame scenario, option B was chosen far more than option A. As Tversky and Kahneman (1986) have claimed, people tend to be more extreme in their choices when they are faced with a loss scenario than when they are faced with a gain scenario. For example, if someone was told they would win a certain amount of money if they chose option A for example, but if they chose option B they would have a 33.3% chance to win more money and a 66.6% chance to get nothing, they would be content with getting a certain amount of money and the chances are they would not risk getting all the money or not getting them at all. They would choose the safe option (a portion of the whole amount of money) so as to increase the amount of money they already have. However, if the same person was told that the chances are that a certain amount of money would be lost for sure or that there was a probability to lose everything or nothing, then this person would most likely take the probability risk in order not to surely lose this amount of money. The fear of

loss lends weight to the emotional triggering of the participants and this emotional triggering, along with the lessening of the cognitive effort when using a native tongue, leads to the framing effect described above.

3.2.2. Unexpected lack of modulation in the framing effect in theme order change

According to the results, there was no significant modulation in the framing effect when the text had the theme placed after the rheme. What was expected was that when the theme was placed after the rheme, the reader of the text would be "attacked" by the emotional load the rheme carried because of the verb which was an emotional word in each of the two cases («θα σωθούν» which is the Greek equivalent of "will be saved" in the gain frame scenario and «θα πεθάνουν» which is the Greek translation for "will die" in the loss frame scenario) and as a consequence the framing effect would be greater than in the cases where the theme preceded the rheme. However, this hypothesis was not confirmed. The framing effect in the texts with theme placed first and the texts with the theme placed second was more or less of the same magnitude. Thus, these results could not account for the fact that theme order might play a role in the modulation in the framing effect.

Before abandoning completely this hypothesis it should be noted that perhaps the domain of the message affected the modulation in the framing effect. More specifically, the Asian disease problem that was used in this study concerned health issues. According to Levin et al. (1998) when a choice involves health issues, the decision-maker is more likely to make riskier decisions and, hence, more likely to "obey" the framing effect than when a choice is made in less emotional domains, such as shopping or morals. Maybe in the present study, the health message as a whole was

strong enough to increase the emotionality rate no matter the syntactic order of the elements in it. Thus, the same level of emotionality seemed to have appeared in both syntactic situations and the framing effect failed to be modulated. In other words, the theme-rheme order was not important because of the emotional load of the message as a whole.

3.3. General conclusions

The present study replicated previous findings concerning the appearance of the framing effect in a native language when participants were presented with a risky choice framing task. However, not all three hypotheses of this study were confirmed. As it was expected, the framing effect was present in participants' native language (Greek texts). Thus, the hypothesis that the framing effect will appear in the participants' native language was confirmed. Actually, the framing effect was found in all three participant categories, namely participants who received the problem in their native language (Greek text) with the theme placed first or second, and participants who received the problem in their second language (English text). Thus, the second hypothesis that stated that the framing effect will be reduced in the foreign language because the foreign language will instigate more systematic and logical choices and hence the FLe will appear was not confirmed. The framing effect was not reduced in the foreign language since participants continued to be risk averse when they had a gain scenario and risk seeking when they had a loss scenario. This was an unexpected finding since the idea of the FLe is related to the reduction of the framing effect in a foreign language. However, there might be other factors contributing to the persistence of the framing effect in a foreign language (social factors and the relation participants have with the foreign language). Nevertheless, it should be noted that although the results for the FLe

were not statistically significant and although the sample of participants was large enough, there was a trend towards the expected direction since the difference between the choices (A and B) in each frame (negative or positive) was reduced. The third hypothesis that related to the syntax playing a role in the modulation in the framing effect was not confirmed either. The theme following the rheme had no significant increase in the framing effect when compared to the theme preceding the rheme. However, the lack of this effect in the present study does not necessarily exclude the possibility that the position of theme-rheme may intensify the framing effect. As previously discussed, perhaps the message the text provided triggered strong emotional connotations that did not allow any inside noteworthy text changes to transpire.

Directions for future research

4. Implications and future directions

The fact that the hypothesis of the reduction of the framing effect when using a foreign language was not confirmed leads to the assumption that there are certain factors accountable for the lack of the FLe. One of them may be the relation Greeks have with the English language because of the tourist and trade industry that preserve the national economy. This sheds light to a new terrain relating to the framing effect, the social aspect. Thus, it would be informative to consider the social background of the

participants in future studies and see whether participants from different social backgrounds would react differently to certain decision-making problems.

Another factor that may have been accountable for the persistence of the framing effect is the Department the chosen participants came from in relation to their social background. Thus, it would be interesting to examine whether the results would be the same if the participants were students of another Department in Greece. It would also be interesting to examine whether the same would apply to another language that has the same relation to English as the Greek language.

As far as the hypothesis of the modulation in the framing effect due to theme-rheme changes is concerned, the results may have failed to reach significance because of the excessive emotionality prompted by the specific domain the Asian disease problem refers to, namely the health domain. Thus, it would be useful – from a linguistic point of view – to examine whether the change in theme order would modify the framing effect if the decision-making problem was placed in another, more emotionally distant domain, like shopping, gambling or moral judgment. Apart from the theme order scenario, other syntax manipulations could also be checked further. For example, whether the use of passive voice might mitigate the framing effect in the native language.

Future studies should also check whether the sex factor plays a role in the participants' choices. In their study, Ellingsen, Johannesson, Mollerstrom, and Munkhammar (2013) argued that female participants are more sensitive to the context a message of a problem provides than men and that females are the ones accountable for the framing effect. In the present study females outnumbered male participants (88.4

% vs. 11.6 %). Hence, future studies should examine whether the sex factor might prompt different results in a more neutralized situation.

A final factor that may affect the framing effect and the FLe and, hence, a factor that is worth considering is the age of the participants. Several studies have pointed to the fact that age plays a key role in the framing effect (Kim, Goldstein, Hasher, & Zacks, 2005; Pu, Peng, & Xia, 2017). Thus, it would be reasonable to argue that older adults might show less "attraction" towards framing effects because of their experience in making decisions. It could also be argued that older adults are more prone to the framing effect than young people because of the decline in their cognitive capacity. This is the point Kim et al. (2005) have made. According to Kim et al. (2005), older adults are more susceptible to the framing effect than younger adults because they have restricted cognitive resources due to their aging and therefore, they incline towards more heuristic processes. These heuristic processes are considered to be the ones that trigger the framing effect and this concatenation led Kim et al., (2005) infer that older adults are more "vulnerable" to the framing effect.

On the other side lies Pu, et al.' s (2017) argument. They found that there is a difference in the framing effect in different ages according to the domain of the decision problem. For example, if the problem involved life-saving issues then it would prompt high-emotional arousal instead of low-emotional arousal prompted by money-gambling issues. What they found was that in the low-emotional arousal task, both young and older adults showed the framing effect and, hence, there was no age difference. However, in the high-emotional arousal task, only the young adults showed the framing effect; older adults were risk averse in all situations. The explanation of their findings was that older adults tend to contemplate more on life-saving decisions since they have

a shorter lifespan than young people. This leads to their goals regarding emotional regulation being more salient. Because older adults rely more on their emotional goals, they rely less on affective heuristic processes and, as a consequence, the framing effect ceases to exist. All in all, what Pu et al. (2017) propose is that the difference between older and young adults lies in high-emotional tasks where older adults' decisions are motivated by emotional goals, not affective heuristic processing. This leads to the assumption that the framing effect may disappear in older adults when the decision-making problem contains high-emotional messages. Having these opposing views in mind, it seems imperative for future studies to delve more into age differences among participants since it looks possible that the results would not be the same in all cases.

Concluding, future studies appear to be eminent as there are so many questions yet to be answered and the only way to move forward is to move backward and try to contribute to the already existing literature in as many innovative ways as possible.

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Appendix

Appendix A

Materials administered to participants

English version with positive frame (not revealed to the participants)

Read the following text and choose one answer. Circle your answer below the text.

Recently, a dangerous new disease has been going around. Without medicine, 600,000 people will die from it.
In order to save these people, two types of medicine are being made.

If you choose Medicine A, 200,000 people will be saved.

If you choose Medicine B, there is a 33.3% chance that 600,000 people will be saved
and a 66.6% chance that no one will be saved.

Which medicine do you choose?

Medicine A

Medicine B

English version with negative frame (not revealed to the participants)

Read the following text and choose one answer. Circle your answer below the text.

Recently, a dangerous new disease has been going around. Without medicine, 600,000 people will die from it.
In order to save these people, two types of medicine are being made.

If you choose Medicine A, 400,000 people will die.

If you choose Medicine B, there is a 33.3% chance that no one will die
and a 66.6% chance that 600,000 people will die.

Which medicine do you choose?

Medicine A

Medicine B

Greek version with positive frame and Theme 1 (not revealed to the participants)

Διάβασε το παρακάτω κείμενο και επίλεξε μία απάντηση. Κύκλωσε την απάντησή σου κάτω από το κείμενο.

Πρόσφατα, μία επικίνδυνη νέα ασθένεια κυκλοφόρησε. Χωρίς φάρμακο, 600.000 άνθρωποι θα πεθάνουν από αυτήν. Προκειμένου να σωθούν αυτοί οι άνθρωποι, δύο τύποι φαρμάκων έχουν φτιαχτεί.

Αν διαλέξεις το Φάρμακο Α, 200.000 άνθρωποι θα σωθούν.

Αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες 600.000 άνθρωποι να σωθούν
και 66,6% πιθανότητες κανένας να μη σωθεί.

Ποιο φάρμακο διαλέγεις;

Το φάρμακο Α

Το φάρμακο Β

Greek version with negative frame and Theme 1 (not revealed to the participants)

Διάβασε το παρακάτω κείμενο και επίλεξε μία απάντηση. Κύκλωσε την απάντησή σου κάτω από το κείμενο.

Πρόσφατα, μία επικίνδυνη νέα ασθένεια κυκλοφόρησε. Χωρίς φάρμακο, 600.000 άνθρωποι θα πεθάνουν από αυτήν. Προκειμένου να σωθούν αυτοί οι άνθρωποι, δύο τύποι φαρμάκων έχουν φτιαχτεί.

Αν διαλέξεις το Φάρμακο Α, 400.000 άνθρωποι θα πεθάνουν.

Αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες κανένας να μην πεθάνει
και 66,6% πιθανότητες 600.000 άνθρωποι να πεθάνουν.

Ποιο φάρμακο διαλέγεις;

Το φάρμακο Α

Το φάρμακο Β

Greek version with positive frame and Theme 2 (not revealed to the participants)

Διάβασε το παρακάτω κείμενο και επίλεξε μία απάντηση. Κύκλωσε την απάντησή σου κάτω από το κείμενο.

Πρόσφατα, μία επικίνδυνη νέα ασθένεια κυκλοφόρησε. Χωρίς φάρμακο, 600.000 άνθρωποι θα πεθάνουν από αυτήν. Προκειμένου να σωθούν αυτοί οι άνθρωποι, δύο τύποι φαρμάκων έχουν φτιαχτεί.

Αν διαλέξεις το Φάρμακο Α, θα σωθούν 200.000 άνθρωποι.

Αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες να σωθούν 600.000 άνθρωποι
και 66,6% πιθανότητες να μη σωθεί κανένας.

Ποιο φάρμακο διαλέγεις;

Το φάρμακο Α

Το φάρμακο Β

Greek version with negative frame and Theme 2 (not revealed to the participants)

Διάβασε το παρακάτω κείμενο και επίλεξε μία απάντηση. Κύκλωσε την απάντησή σου κάτω από το κείμενο.

Πρόσφατα, μία επικίνδυνη νέα ασθένεια κυκλοφόρησε. Χωρίς φάρμακο, 600.000 άνθρωποι θα πεθάνουν από αυτήν. Προκειμένου να σωθούν αυτοί οι άνθρωποι, δύο τύποι φαρμάκων έχουν φτιαχτεί.

Αν διαλέξεις το Φάρμακο Α, θα πεθάνουν 400.000 άνθρωποι.

Αν διαλέξεις το Φάρμακο Β, υπάρχουν 33,3% πιθανότητες να μην πεθάνει κανένας
και 66,6% πιθανότητες να πεθάνουν 600.000 άνθρωποι.

Ποιο φάρμακο διαλέγεις;

Το φάρμακο Α

Το φάρμακο Β

Appendix B

Questionnaires administered to participants

Language Experience Questionnaire

Circle Sex: Male or Female Age: Native language:

Years of Studies in Higher Education (University):

Is English your second language? (The language you learnt after your native language):

Circle Yes or No

If No, which language is your second language and which place does English have among the languages you speak?

At what age did you start learning English?

Please rate your **reading comprehension** skill in **ENGLISH** on a 7-point scale.

1 2 3 4 5 6 7

skill lacking excellent

Please rate your **listening comprehension** skill in **ENGLISH** on a 7-point scale.

1 2 3 4 5 6 7

skill lacking excellent

Please rate your **written production** skill in **ENGLISH** on a 7-point scale.

1 2 3 4 5 6 7

skill lacking excellent

Please rate your **oral production** skill in **ENGLISH** on a 7-point scale.

1 2 3 4 5 6 7

skill lacking excellent

Do you have a degree in English? Circle Yes or No

If Yes, which degree do you have (e.g., Lower, Advanced, Proficiency)?

Do you have any language learning difficulties (e.g., dyslexia)? Circle Yes or No

If Yes, what kind of language learning difficulty do you have?

Ερωτηματολόγιο Ελληνομάθειας

Κύκλωσε Φύλο: Άρρεν ή Θήλυ Ηλικία: Μητρική Γλώσσα:

Χρόνια σπουδών στην ανώτατη εκπαίδευση (Πανεπιστήμιο):

Ποια είναι η δεύτερή σου γλώσσα; (Η γλώσσα που έμαθες μετά τη μητρική σου γλώσσα):

Σε ποια ηλικία άρχισες να μαθαίνεις τη δεύτερή σου γλώσσα;

Ποιες άλλες γλώσσες μιλάς;

Αξιολόγησε την ικανότητά σου στην **κατανόηση γραπτού λόγου** στα **ΕΛΛΗΝΙΚΑ** σε κλίμακα 1-7.

1 2 3 4 5 6 7
ελλιπής άριστη

Αξιολόγησε την ικανότητά σου στην **κατανόηση προφορικού λόγου** στα **ΕΛΛΗΝΙΚΑ** σε κλίμακα 1-7.

1 2 3 4 5 6 7
ελλιπής άριστη

Αξιολόγήσε την ικανότητά σου στην **παραγωγή γραπτού λόγου** στα **ΕΛΛΗΝΙΚΑ** σε κλίμακα 1-7.

1 2 3 4 5 6 7
ελλιπής άριστη

Αξιολόγησε την ικανότητά σου στην **παραγωγή προφορικού λόγου** στα **ΕΛΛΗΝΙΚΑ** σε κλίμακα 1-7.

1 2 3 4 5 6 7
ελλιπής άριστη

Έχεις μαθησιακές δυσκολίες (π.χ. δυσλεξία);
Κύκλωσε Ναι ή Όχι
Αν Ναι, τι είδους μαθησιακές δυσκολίες έχεις;