



IUL School of Social Sciences

Department of Psychology

Bilingualism, Emotions and Decision-making

Dissertation submitted as a partial requirement for the conferral of

Master in Psychology of Emotions

by

Svetlana Bilous

Supervisor:
PhD Carla Moleiro, Assistant Professor,
ISCTE-IUL

September, 2013

Acknowledgements

This research project would have not been possible without the support of many people, to whom I want to express my sincere gratitude.

First and foremost, I take immense pleasure in deeply thanking my supervisor Prof. Dr. Carla Moleiro for the valuable guidance and advice. Her willingness to motivate, useful suggestions, experience in working with diversified samples, theoretical inputs and practical approach contributed tremendously to this project.

I would like to show my greatest appreciation to the faculty professors of ISCTE-IUL that prepared me for the completion of this work.

I would also like to thank to all participants that devoted their time to answering the questionnaires.

Finally, yet importantly I would like to express my heartfelt thanks to my beloved parents and sister for their blessings, and my friends for their help and wishes for the successful completion of this project.

Thank you!

Resumo

Este estudo é dedicado a explorar a relação entre o bilinguismo, emoções e o processo de tomada de decisão. Na verdade o mundo moderno, que se torna cada vez mais globalizado, promove a aquisição de pelo menos uma ou na maioria dos casos algumas línguas estrangeiras. A maioria dos estudos confirmam que a língua materna é mais emocional de que a segunda língua (L2). Este projecto foi desenhado para verificar se o uso de L2, provocando distanciamento emocional, podia influenciar o processo de tomada de decisão. O total de 407 participantes Portugueses e Russos receberam o inquerito com variáveis sócio-demográficas e relacionadas com a língua, sendo que posteriormente, quatro dilemas de tomada de decisão foram apresentados. Os resultados confirmaram que o uso de L2 pode influenciar o processo de tomada de decisão, em contextos dispersos. Os participantes que responderam em L2 optaram pela tomada de decisão de menos risco, garantido uma opção mais benéfica para si (passando por um rapaz a afogar-se), que pode ser explicado por distanciamento emocional que provocou o processamento mais lógico. Deste modo verificamos que existe a possibilidade de existir uma correlação entre a língua utilizada e tomada de decisão quando essa decisão tem em causa o próprio participante e que esta possibilidade de influência é menor quando nos encontramos em assuntos abstractos. Os resultados são discutidos e as direcções futuras para próximas pesquisas são exploradas.

Palavras-chave: Bilinguismo, língua materna, segunda língua, distanciamento emocional, tomada de decisão.

Códigos PsycINFO:

2720 Linguistics & Language & Speech

3020 Groups & Interpersonal Processes

Abstract

The current study is devoted to exploring the relation between the bilingualism, emotions and decision-making. In fact the modern world, being each time more globalised, promotes acquiring of at least one or in most cases few foreign languages. Most studies confirm that mother tongue is more emotional than the second language (L2). This project was designed to verify if the usage of L2, provoking emotional detachment, could influence the process of decision making. A total of 407 Portuguese and Russian participants were given a questionnaire on socio-demographic and language related variables, after what four decision making dilemmas were presented. The results confirmed that using L2 could influence the process of decision making, at least in some contexts. The participants answering in L2 opted for less risk taking decisions, securing a more beneficial option for themselves (passing by a sinking boat) that can be explained by emotional detachment provoking more logical mindset. In this way we verified that there is a possibility of existing a correlation between language used and a decision made when the decision is concerned personally the respondent, and that this possibility of influence is less when we turn to abstract subjects. Results are discussed and future directions for future research in this area are explored.

Keywords: Bilingualism, mother tongue, second language, emotional detachment, decision-making

PsycINFO Classification Categories:

2720 Linguistics & Language & Speech

3020 Groups & Interpersonal Processes

Index

	Page
Resumo	i
Abstract	ii
1. Introduction	1
2. Concepts definition	2
2.1. Bilingualism	2
2.2. Decision-making	7
2.3. Goals of the Study and Hypotheses	10
3. Methods	12
3.1. Participants	12
3.2. Instruments	12
3.3. Procedure	15
4. Results	16
4.1. Results on the Dilemmas: Decision-Making	17
4.1.1. Boy in the river dilemma	17
4.1.2. Giving version of the Ultimatum game	19
4.1.3. Asian disease	20
4.1.4.10-coin give some game	22
5. Discussion	24
6. Bibliography	27
7. Appendix	30
7.1. Cover Letter for E-Mailed Questionnaire	31
7.2. Consent Form	32
7.3. Questionnaire in English	34
7.4. Questionnaire in Russian	39
7.5. Questionnaire in Portuguese	44

Index of Figures

Figure 4.1.	Boy in the river dilemma results within four groups distributed depending on participants' nationality and language used for answering the questionnaire	18
Figure 4.2.	Comparison of Boy in the river dilemma results within two groups distributed depending on L1 or L2 usage while answering the questionnaire.....	19
Figure 4.3.	Comparison of "Asian disease" dilemma results within two groups distributed depending on L1 or L2 usage while answering the questionnaire	21
Figure 4.4.	"Asian disease" dilemma results within four groups distributed depending on participants' nationality and language used for answering the questionnaire	22

Index of Tables

Table 4.1.	Level of participants' proficiency in L2	16
Table 4.2.	Comparison of Boy in the river dilemma results within four groups distributed depending on participants' nationality and language used for answering the questionnaire	17
Table 4.3.	Comparison of Boy in the river dilemma results within two groups distributed depending on L1 or L2 usage while answering the questionnaire.....	18

1 - INTRODUCTION

Bilingualism is a widespread notion nowadays, when the borders of the countries are easy to cross and with constantly increasing number of working and studying migration within the European Union and beyond. Knowledge of the foreign language is a valuable asset while applying for a job, doing a scientific research and usual travelling, so school programs were adjusted to teach the second language in the elementary school. Furthermore, children growing in bilingual families have an advantage of using various languages at home. The competitive advantage of foreign languages is recognized within the nations, for example Grosse (2004) received a positive feedback on the connection of the knowledge of foreign language that combined with relevant cultural information fosters the business environment. And with rapidly developing globalization, it is a common thing to have people that speak three, and sometimes four or five languages. These ideas are supported by the statistics as according to recent data, more than half of the world's population is bilingual (Grosjean, 2010).

The domain of research of bilingualism deals with different multidisciplinary aspects of second language acquisition. In this project we are to verify the link with emotional aspect of using different languages and its further influence on decision-making process. Decision-making process in itself is a multidimensional notion that is influenced by various factors, including emotions. We always try to make an optimal and objective decision with the highest level of utility, however the context (place, time, weather and other external factors), combined with internal ones such as physical state and emotions could make a difference in the type of final decision taken, the latter one being verified in this study.

The structure of the thesis is the following. After the introduction, we highlight the main concepts of the project such as bilingualism, decision making and their connection with emotional component, in a review of the main literature. Then we define objectives and hypotheses of the project with further explaining the methodology of the empirical experiment carried out. The results and discussion sections are devoted to the presentation interpretation of the statistic analyses of the quantitative data obtained and possible directions for future research.

2 - CONCEPTS DEFINITION

2.1. Bilingualism

The sample of this project consists of bilinguals, but what do we mean when we use this term? Within the scientific society numerous attempts have been made to reach a unique definition, and possibility to analyze it in different dimensions and within the interdisciplinary projects. We are to highlight the milestones of the relevant studies in this domain as, in spite the fact of using this term so often, there is still a continuing bulk of research to be done.

The rapidly changing reality requires the corresponding flexibility of the population and being bilingual could be considered one of such adjustments. Nevertheless, if about the developing politics or economics all the needed statistics is accessible, when we move to the nature of human reality and its internal processes, the picture becomes less clear.

In the linguistic tradition, most of the research initially was done in monolingual domain. According to Pavlenko (2005), the previously predominant Chomskian view of the language obliterated bilingualism as uninteresting phenomena for theories of language and mind. This fact led researchers to avoid including to the sample bilingual participants or, when they appeared to be included, the fact that some of the participants were bilingual was omitted. However, nowadays the increasing number of studies appears regarding second and third language acquisition and their interconnectivity, so we could see that the paradigm changed.

According to Pavlenko (2005), there are two approaches to the notion of bilingualism – a layperson definition - people who have similar levels of proficiency in two or more languages, typically learned from birth; and a use-based definition - people who use two or more languages or dialects in their everyday life – be it simultaneously (in language contact situations) or consecutively (in the context of immigration). For the current project we opt for leveraging on the latter use, based definition of bilingualism that includes much larger group of people.

While analyzing the notion of bilingualism, Pavlenko (2005) uses the notions of competence, performance and proficiency. Competence means the unconscious knowledge a speaker has of the linguistic, sociolinguistic and communicative principles that allow the interpretation and use of the particular language. Performance is related both to the language use and creative construction of self and others. And proficiency

refers to the overall level of achievement in a particular language and the level of achievement in discrete skills. For this study, the level of proficiency is of crucial importance, so we are to control it while working with quantitative data.

Within the second language acquisition (SLA) theory, the abbreviation L1 is used to refer to the first language and the abbreviation L2 is used to refer to the second language, L3 to refer to the third one, etc. L1 refers to the language or languages learned first, regardless of the speaker's current proficiency. However, L2 can be referred to any language learned later in life, whether or not it would be the second language in chronological terms. What is more, SLA researchers single out second and foreign languages when second one is applied to the language used in daily environment and the latter one to the language studied in an educational context. Thus, these definitions sometimes could be mixed when we have an example of teaching Spanish as a foreign language in the USA when Spanish is one of largest linguistic minorities in the country. So within this project, we opt for using the term of the second language (L2) applied both for the language used in daily life and studied in the educational context and not obligatory the second one in chronological terms, but the second one in terms of speaker's proficiency at the moment of the study.

In terms of dominance within languages for bilinguals, there could be balanced bilinguals whose level of proficiency is relatively similar between the languages they speak, and dominant bilinguals who have higher proficiency in one of the languages (Pavlenko, 2005). In this project we include both balanced- and dominant bilinguals.

Furthermore, there are simultaneous bilinguals who acquired two or more languages from birth, childhood bilinguals who learned their additional language or languages in early or late childhood, and late or post-puberty bilinguals who acquired additional languages as teenagers or adults. In this study most of the bilinguals are childhood or late bilinguals, which will be further noted in sample characteristics.

Traditionally, L1 competence is regarded as a stable phenomenon; however, the investigation in this domain (Pavlenko, 2006) has shown that it is a dynamic one. For example, in case mother tongue is connected with negative events, people seem to try to avoid, using it opting for L2 or when people are exposed to L2, L3, L4 and these are the languages used more often, the proficiency in L1 decreases.

A vague notion of the fact that a monolingual person should differ from bilingual one appeared already in the 20th century (for reviews, see Diaz 1983; Hakuta and Diaz 1985; Portes and Schauflyer 1994; Baker 1996). However, initially, the

acquisition of L2 was considered an extra effort, consuming cognitive resources; but already a study by Peal and Lambert (1962) proved on the contrary. The researchers compared the results of a number of tests of French-speaking monolinguals or English–French bilinguals in Montreal. The expected results presupposed the lower results in bilingual group, but instead the bilinguals got better results in most tests, especially those requiring symbol manipulation and reorganization. Furthermore, the possibility that bilingualism contributes to cognitive processes became an important idea for further studies.

According to Bialystok (2012), being bilingual brings an number of advantages such as in inhibition, in selection, sometimes in switching, in sustaining attention, in working memory, in representation and retrieval. Altogether, such view could be considered as a ‘mental flexibility’, the ability to adapt to ongoing changes and process information efficiently and adaptively.

These advantages were traced within the different age groups. The effect was already noticeable among 3-6 year olds. Children who were bilingual in Italian and Slovenian (with Slovenian as the dominant language) generally outperformed those who were either monolingual in Italian or Slovenian (Siegal et al., 2009). An earlier study involved children aged 4–6 years who were either monolingual in English or Japanese or bilingual in the two languages (Siegal et al., 2007), with similar results.

Bialystok (2012) found advantages in fully bilingual children for metalinguistic awareness and executive control, when metalinguistic performance improved with increased knowledge of the language of testing; the executive control performance improved with increased experience in a bilingual education environment.

Another scientific domain that traced the influence of bilingualism is medicine, specifically with a research study regarding the Alzheimer’s disease patients. It is argued that bilingualism contributes to increased cognitive reserve, in this way delaying the onset of the Alzheimer’s disease and requiring the presence of a greater amount of neuropathology before the disease is manifested. Prior work in this area has shown that the onset of the Alzheimer’s disease is significantly delayed by as much as 5 years in patients who are bilingual (Bialystok et al., 2007; Craik et al., 2010).

Most of the studies prove bilingualism fosters better performance; nevertheless, the empirical evidence is not always consistent. For example, with regard to the speed of word processing in semantic access, the empirical results show that bilingual speakers generally manifest slower word recognition than monolinguals (Martin et al.,

2012). The researchers investigated the consequences of word processing speed on semantic access in bilinguals, and concluded that bilinguals were slower in performing the task. The results suggest that bilinguals cannot discriminate between pseudo-words and words without accessing semantic information, whereas monolinguals can dismiss English words on the basis of subsemantic information. Similar results were obtained earlier by De Groot (2002) and Gollan (2011), when individuals handling two languages generally manifested slower language processing than their monolingual peers.

Being bilingual presupposes having two equivalent words associated to the same concept. Furthermore, some sort of language control mechanism needs to be activated, bilinguals need not only to decide the message they want to transmit, but also, in contrast to monolinguals, to do so in the appropriate language for each communicative situation. This aspect tends to the notion of the language switching. From a neurolinguistic approach, extant investigation has been done regarding what possible differences occur while processing and using L2 compared with L1. Carbin (2010) found activation in the right inferior frontal cortex and the anterior cingulate of monolingual participants. While bilingual participants showed a reduced switching cost, they activated the left inferior frontal cortex and the left striatum. Overall, these results support the hypothesis that bilinguals' early training in switching back and forth between their languages leads to the recruitment of brain regions involved in language control when performing non-linguistic cognitive tasks. This direction of research represents the neural perspective as defined in Hartsuihen (2008), when the functional perspective answers the question how language is represented and processed in a cognitive system.

The activation of cognitive processes leads to facilitating adaptation and acculturation. Han (2010) made a special emphasis on the socioemotional well-being of bilinguals performing a longitudinal study when most Latino children who spoke a non-English language were doing as well as, if not better than, their White English Monolingual peers on socioemotional well-being. By fifth grade, fluent Bilingual and Non-English-Dominant Bilingual children were surpassing every other group with the highest levels of approaches-to-learning, self-control, and interpersonal skills and the lowest levels of internalizing and externalizing behavior problems. English-Dominant Bilingual children had similar levels and trajectories of socioemotional well-being as those of White English Monolingual children. Non-English Monolingual children, however, had the lowest self-control and interpersonal skills and the highest level of

internalizing problems by fifth grade, as rated by their teachers. Such results, combined with the data on cognitive benefits, add up to the proving of the importance of bilingualism nowadays.

This proves that the different level of advantages of being a bilingual could be a result of L2 itself, and to the social circumstances and even the culture the L2 brings into life of a child or adult. Taking into consideration this point of view, researchers also define a difference between being bilingual or bicultural (Luna, 2008) wherein the term of bicultural bilingual is used to refer only to the persons who incorporated two cultures within themselves and speak the languages of those cultures. As a consequence, bicultural individuals with extensive experience in two cultures seem to access different culture-specific cognitive structures, or mental frames, depending on the sociocultural context. And each time depending on the environment, they switch not only the language but culture-specific mental frameworks. As a possible consequence, there are to be differences between mono- and bilinguals and mono- and bicultural persons. Nevertheless, within this study, we concentrate only on mono- and bilingualism, and not on the cultural component.

Regarding the differences in the emotional component, already Arsenian (1945) offered to analyze the affective values of single words, and in 1953 Weinreich mentioned the idea that bilinguals may have distinct emotional attachments to their languages. Later in 1954 Ervin examined responses in Japanese and English from a Japanese-English bilingual who was born in the United States into a Japanese-speaking family and educated in Japan between the ages of eight and fourteen. The researcher discovered that the Japanese stories were much more emotional compared with the English ones. The English sentences were abstract and cold, and the Japanese ones included feelings. This was explained by the differences in the emotional relationships formed in two languages of the bilingual individual. Further Vidomec (1963) showed that bilinguals have distinct emotional attachments to the languages. The new wave of research connected with bilinguals and emotions appeared after the development in the fields of psychology, linguistics and anthropology about the human emotions (Ekman, 1980; Izard, 1977).

According to Damasio (1999), emotions are “biologically determined processes, depending on innately set brain devices, laid down by a long evolutionary history” (p.51). These processes share common experimental qualities and are expressed through universally understood facial expressions (Ekman, 1980, 1992, 2003; Izard, 1977; Le

Doux, 1996). In the frame of this project, we are interested in the connection between the set of emotions provoked while using L1 or L2.

Pavlenko (2002) mentions the existence of emotional distance between the first and the second language. Some studies indicate that bilingual individuals may perceive emotional states differently depending on the language in which they were recounted (Ervin-Trip. 1954, 1964; Rintell, 1984, 1990). Bond and Lai (1986) showed that the use of the second language may act as a distant function, permitting L2 users to express ideas in their second language that would be too disturbing in their first. And Grosejean earlier (1982) also suggested that, in terms of late bilinguals, personal involvement is expressed in the native language and detachment in the second. And specially, this difference seems notable when the second language was acquired in puberty (Pavlenko, 2002). Within the frame of this project, we are determined to verify: if the usage either of L1 or L2 provokes different emotional components in respondents that could influence the process of their decision-making.

2.2 Decision-making

A huge variety of decision-making investigation suggests several approaches to understanding this complex process. Initially decision-making was considered a purely rational process, represented by a rational-analytical system (Epstein et al., 1996), that presupposes slow, controlled, flexible, neutral and effortful information processing (Starcke et al., 2012). Nevertheless, people do not always opt for optimal decisions, sometimes opting for a satisfactory one. What is more, this approach does not explain decisions made on the basis of intuition. That is why the second system presented was intuitive-experimental (Epstein et al., 1996) that presupposed fast, parallel, associative and emotional type of processing (Starckle et al., 2012).

Each decision made is characterized by the certain level of uncertainty. With a highest level of uncertainty, the information just cannot be processed in a strategic way, so the intuitive-experimental system may play a more prominent role. With a moderate level of uncertainty, both systems of the dual process theory are activated (Starckle et al. 2012).

Another approach to explaining the impact of feelings on decision making was introduced by Pham (2004), stating that feelings could be firstly considered as proxies for values, that is, being used as a source of information regarding an alternative; secondly, feelings prime thoughts, triggering the type of content that comes to our mind.

When addressing the influence of emotions into the decision making process, it is important to understand when they enter into the process. Two kinds of influence are distinguished: expected and immediate emotions (Loewenstein et al., 2003). Under expected emotions we understand the predictions about the emotional consequences of the decisions made. The important point to mention is that expected emotions are more regarded not as emotions in themselves, but as expectations about emotions we will have in the future. On the contrary, immediate emotions are the ones experienced at the time of decision making. They can have a direct or indirect impact. In brief, immediate emotions represent a combined effect of emotions that arise from contemplating the consequences of the decision itself, as well as emotions unrelated to the decision.

Emotions were considered irrational and dysfunctional for centuries (Martinez et al., 2008). Nowadays, it is scientifically accepted that emotions can profoundly (and positively) influence cognitive processes. For example, individuals are more likely to recall information from memory that is congruent with their current feelings, as we tend to evaluate something more positively when we are in a happy mood. Furthermore, individuals in a happy mood tend to overestimate the likelihood of positive outcomes, and to underestimate the likelihood of negative outcomes and events (Schwarz, 2000).

In terms of decision making, it was viewed as a matter of estimating which of various alternative actions causes the most positive consequence. Decision makers were assumed to evaluate the potential consequences of their decisions dispassionately and to choose actions that maximized the “utility” of those consequences (Loewenstein et al., 2003). Within such an approach, the influence of emotions was neglected. The changing paradigm applied a valence-based approach referring to the positivity (utility or satisfaction) or negativity (disutility or dissatisfaction) of an emotion (Martinez et al., 2008). In other words, main research was done in evaluating the impact of general positive and negative emotions, understanding them as unidimensional and bipolar (Clore, Schwarz, & Conway, 1994; Forgas, 1995; Raghunathan & Corfman, 2004; Schwarz, 1990). Isen and Labroo led a research on the emotions’ influence on the connection with the cognitive sphere, proving its impact on cognitive organization and flexibility, problem solving, decision-making, and risk taking (Isen & Labroo, 2002, cit. Angie et al., 2011).

Later, in 2005, comparing positive and negative emotions, Chuang and Kung (2005) verified that individuals experiencing happiness tended to choose the safe option more often than those experiencing sadness. In contrast, the emotion of sadness has

been associated with feelings of loss as well as the tendency to engage in thoughtful and more detail-oriented processing of cognitive tasks (Garg, 2004; Semmler & Brewer, 2002), possibly as a way to avoid thinking about the emotion-eliciting situation (Smith & Ellsworth, 1985). Additionally, research by Schwarz et al. (1991) proved that when presented with both strong and weak persuasive messages, happy individuals were equally persuaded by both strong and weak messages, whereas sad individuals were more persuaded by strong than weak messages (cit. in Angie et al., 2011).

Zeelenberg and Pieters (2006) consider this valence-based approach useful in terms of facilitating across disciplinary boundaries, it could foster easier obtaining the relevant measures when emotions are not strong enough to distinguish (Martinez et al., 2008). However, after a discovery of the fact that emotions with the same valence could have different effects, the necessity of a specific-emotions approach was announced. In this way, starting from the 1980s, the first attempts of analyzing the influence of specific emotions started.

Martinez, Zeelenberg and Rijsman (2008), in the article “Why valence is not enough in the study of emotions”, highlight five main points that benefit the approach of distinguishing specific emotions. Among them there is firstly the richness of emotional experience. Secondly, there is a bi-valence of some emotions when the same emotion could represent both positive and negative valence (for example, pride could be considered a positive emotion while evaluating someone’s performance, or a negative one when it is considered to be a sin). Thirdly, the fact of existing of mixed emotions such as approach-avoidance conflict when the chosen option provokes also negative consequences. Furthermore, when valence is defined as a sum of specific emotions, its measure proves to be more elaborated if compared with specific-emotions approach. Finally, in real life we have a multiple choice of emotions to react or on the contrary inact that cannot be fitted to the valence-based approach.

The above mentioned facts prove that discrete emotions influence cognitive processes and, what is more important, that the same-valence emotions could have a different impact on the decision making process. Under discrete emotions, we understand short-lived, intense phenomena that usually have clear cognitive content that is accessible to the person experiencing the emotion (Clore et al., 1994, cit. in Angie et al., 2011).

Lots of research was done in contrasting anger and fear, showing that they cause different assessments of the likelihood of negative events (for example, fear activates

higher estimates of the likelihood of risky events occurring, while anger activates the opposite) and make different choices between risky alternatives (e.g., fearful individuals tend to choose the “sure thing”, while angry individuals choose the opposite; Lerner & Keltner, 2001). In addition, angry individuals are more likely to stereotype targets, and show more automatic prejudice toward an out-group than sad or neutral individuals (Bodenhausen, Kramer, & Susser, 1994; Bodenhausen, Sheppard, & Kramer, 1994; DeSteno, Dasgupta, Bartlett, & Cajdric, 2004, cit. in Angie et al., 2011).

A further area of research is within regret and disappointment. Zeelenberg, van Dijk, Manstead, and van der Pligt (1998) address two distinct emotions that may result from negative outcomes, namely regret and disappointment. They propose that we experience disappointment when the chosen option turns out to be worse than we expected. In contrast, we may experience regret even when we get what we expected, but realize in hindsight that another course of action would have been (even) better. Zeelenberg and colleagues (cit in Schwarz, 2000) reviewed the antecedent conditions, appraisals, and phenomenology of regret and disappointment and discussed their behavioural consequences. With regards to social competences in terms of regret and disappointment, Martinez, Zeelenberg and Rijsman (2010) discovered that regret increases pro-social behavior and disappointment provokes the opposite effect.

Among the negative emotions, additional research also focused on anger (e.g., Pillutla & Murnighan, 1996; Van Kleef, De Dreu, & Manstead, 2004), guilt (e.g., De Hooge, Zeelenberg, & Breugelmans, 2007; Ketelaar & Au, 2003), and shame (De Hooge, Breugelmans, & Zeelenberg, 2008).

2.3 Goals of the Study and Hypotheses

To summarize, research has been done in the domain of emotions influencing the process of decision-making, starting from a valence-based approach to analyzing the influence of separate specific emotions. Within the linguistic domain, researchers agree on L2 distancing effect on the speaker, especially for late bilinguals, that presupposes less emotional involvement. Thus, the goal of the present research is to explore the existing connection between language used by bilinguals and the decisions made.

Based on the abovementioned theoretical outline, we have the following hypotheses:

H1: Participants answering in L2 are to be more emotionally detached, making more appropriate own-life-saving decisions compared with participants answering in mother tongue opting for emotionally dictated ones.

H2: Participants answering in L2 are to indicate fewer amounts of common resources to be given to a partner, making the decisions of maximum benefit for themselves in spite of some risk involved, compared with participants answering in mother tongue that are more eager to share.

H3: Participants answering in L2 are to be less influenced by the negative framing, compared with participants answering in mother tongue and avoiding choosing negatively framed option.

3 - Methods

3.1. Participants

In this study 407 participants took part, among them 192 Portuguese and 215 Russian ones. All of them were older than 18 years old and informed that their participation was voluntary. The study included 228 (56%) female and 179 (44%) male participants with the average age of 29 (SD=11,74) within all the groups under analysis. There was no limit to the age of participants with the youngest having 18 and the oldest having 75 years. Among them there were 48,9% of studying participant and 54,6% working ones that presupposes inclusion of students, students that do part-time, workers and people on pension. The level of education varied from Secondary school to PhD degree with major part having finished Secondary school (39,7%) and further having Bachelor (28,8%) or Master degrees (24,9%). In terms of marital status most of the respondents were either single (72,1%) or married (21,1%).

3.2. Instruments

To fulfill the purpose of verifying the defined hypotheses, we developed a questionnaire in English (for Portuguese and Russian respondents), and both Portuguese and Russian versions.

The first part of the questionnaire consisted of social-demographic questions such as sex, age, marital status, level of education, if the person is still studying or already working, and years of work experience. It provided us with participants' social background.

The next set of questions was connected with verifying the mother tongue of the participant and languages he/she knows in general with further specifying the language of best proficiency (excluding mother tongue). Then we specified at what age participants started to acquire L2 and where. This information was important to trace as the linguistic domain of research highlighted the difference in the efficiency of language acquiring and emotional attachment/detachment depending if it was learned only at school or as well practiced at home, learned at the language courses or with the help of friends in the free time; if it was learned in the early-childhood, adolescence or after-puberty period. What is more, we asked about the conditions of usage of L1 and L2 (day-to-day or working/studying environment) and frequency of applying on the scale from "never" to "always". This gave us an idea if L2 is in active or passive domain. The

last point connected with languages was the request to indicate own auto-estimated level of knowledge of L2 on the scale form “Beginner” to “Proficient”. This part was crucial as we needed to verify if the participant properly understood what he/she was reading. As a result for the participants filling the questionnaire in English we added one more question asking them to translate one of the dilemmas to their mother tongue (Portuguese or Russian depending on the nationality of respondents). In this way, we secured a more objective way to verify their proficiency.

The last section of the questionnaire referred to the decision-making domain, for which assessment four dilemmas were chosen. The choice was based on the history of their usage in the previous research and the appropriateness for the current study.

The first dilemma was connected with the decision regarding saving or not saving the life of a boy sinking in the river. It was an adapted version of one of the dilemmas mentioned in “Moral reasoning” of Grassian (1981, 1992). It was written as impersonal, with no exact name mentioned, that presupposed that the person walking was the respondent him/herself and changed information that the passerby could not swim and added a condition that the current was strong and a person could not help a boy with only giving a hand. In this way we insured the respondent, while choosing the reply, understood that he/she was going to risk his/her life in case trying to save the boy. The final version was the following:

“You are walking in the forest near a river in the mountains in the early spring. You cannot swim, but you like this forest and the river is beautiful. You are passing by a deserted pier from which a teenager had apparently fallen in to the water. The boy is screaming for help, away from the margin of the river, so you cannot reach him. The water is cold. The current in the river is strong”.

Two alternatives were given:

“Would you jump into the water trying to save the boy, but with a risk of dying by yourself ?”

Or

“Would you pass by without stopping and knowing that the boy may die?”.

The second dilemma used was the giving version of the ultimatum game (Leliveld, Van Dijk & Van Beest, 2008). It was a social bargaining game with two participants. We used its first part when the respondent assumed the role of proposer that needed to divide an amount of money between him-/herself and a partner, knowing that if the partner refused the amount suggested, nobody got anything. We modified the

amount of the sum of money to 501 Euros to make it more valuable in terms of making the decision regarding further division. The rules of the game were presented to participants as the following:

“You [the proposer] are about to make a deal that will yield you a small amount of money, in this case 501 Euros. However, a colleague of yours [the responder] was the one who made the whole deal possible, so (s)he is waiting for a gratification. Thus, if your partner is not satisfied with your gratification (s)he will make the deal impracticable. First, you will decide on the gratification and tell it to your partner. Once you have made your offer, you cannot change it. Then, your partner will accept or reject your offer. If (s)he accepts it, the deal will succeed and both of you will divide the money according to your proposal. If (s)he rejects it, the deal will not succeed and both of you will get nothing. What is the gratification you give?”

The third dilemma was a loss-frame version of the “Asian disease” problem (Kahneman & Tversky, 1979). The country that was preparing for “Asian disease” was changed (Portugal/Russia) depending on the nationality of respondents. The dilemma sounded as the following:

“Imagine that Portugal/Russia is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows. Which of the two programs would you favor?

Program A: If Program A is adopted 400 people will die.

Program B: If Program B is adopted there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die.”

Finally, the fourth dilemma used was a modified 10-coin give-some game (Van Lange & Kuhlman, 1994). The respondents were to assume they were playing with a partner, each of them having 10 coins that represent a double value if being in the hands of the partner. The decision to make was how many coins you give to your partner without knowing his/her intentions about giving or not giving you the coins. We increased the value of each coin, making it of 5 and 10 Euros. These conditions were presented in the following way:

“You are playing a game with the partner who is sitting next to you. In this game, both of you have ten special coins. Each of your coins is worth 5 Euro for you, but their value doubles (10 Euros) for your partner. The same applies to your interaction

partner: (s)he also has ten special coins, each worth 5 Euro for (her)himself and 10 Euro for you. You have to decide simultaneously how many coins to give one another without knowing the other person's decision. How many coins will you give to your interaction partner?"

3.3 Procedure

The data collection process lasted five months, from April 2013 to August 2013. The study design was correlational and the sample was obtained by convenience.

The questionnaires with the relevant consent forms were distributed among the participants in two ways: electronically and manually. Links to the Google Forms previously created were sent via personal emails and social networks such as facebook.com and vk.com (Russian version of Facebook). Another part of the participants received the printed copies of the questionnaires to be filled in real time (distributed in Moscow, Russia, in Lisbon, Portugal in the airports, universities, local firms). When distributed manually, a short introduction to the study was provided, mentioning the domains under analysis and time prevision needed to fill in the questionnaire. The choice of giving what version of the questionnaire to give was based on the question to the prospective participants if he/she spoke English and further if he/she preferred English or mother tongue. In this way we could reduce the number of non-speaking/poor-speaking English respondents receiving a questionnaire in English. Respondents were also provided with a Consent form informing that their participation is voluntary, that they were free to withdraw without giving any reasons and that information provided will remain confidential.

4 - Results

To obtain the statistical analysis of the sample the data were inserted to Software Package for Social Sciences (Version 20.0). The further data representation was done according to the norms of American Psychological Association (APA).

Firstly, the analysis of the socio-demographic and language relevant variables was performed. There were 192 participants with Portuguese as a mother tongue and 215 participants with Russian as a mother tongue. Among them there were 98 Portuguese participants filling in the questionnaire in Portuguese, 94 Portuguese participants filling in the questionnaire in English, 128 Russian participants filling in the questionnaire in Russian and 87 Russian participants filling in the questionnaire in English.

Majority of the participants of both nationalities learned L2 at school (76%), and only 14.70% of participants learned at home. The age of acquiring L2 varied from the moment of birth until 37 years old, however the majority mentioned that they started to learn L2 when they were 10 (21.60%), 7 (12.90%) or 6 (10.30%) years old, that corresponded to the beginning of elementary or secondary school years. In day-to-day environment L1 was used “always” by 65.60% of respondents, and L2 was used “sometimes” or “often” by 35.50% and 28.80% correspondingly. In working or studying environment L1 was always used by 55.60%, and L2 was often used by 32.90%.

Table 4.1. *Level of participants' proficiency in L2*

Level of proficiency	Frequency	Percent
Beginner	17	4.20
Elementary	38	9.30
Pre-Intermediate	29	7.10
Intermediate	87	21.40
Upper-Intermediate	85	20.90
Advanced	81	19.90
Proficient	60	14.70
Total	397	97.50

In terms of proficiency of L2 that varied from Beginner to Proficient levels the majority of participants had Intermediate (21.90%), Upper-Intermediate (21.40%) or Advanced (20.40%) levels (See Table 5.1.).

4.1. Results on the Dilemmas: Decision-Making

4.1.1. Boy in the river dilemma

If to analyze the total sample, the major part of participants (72.80%) was ready to risk their life while trying to save the boy, and only 27.20% left a boy to sink. Within the frame of this project, we are interested to verify how many of later mentioned participants were filling in the questionnaire in L2. The results within the different language groups provided us with better understanding:

Table 4.2. Comparison of Boy in the river dilemma results within four groups distributed depending on participants' nationality and language used for answering the questionnaire

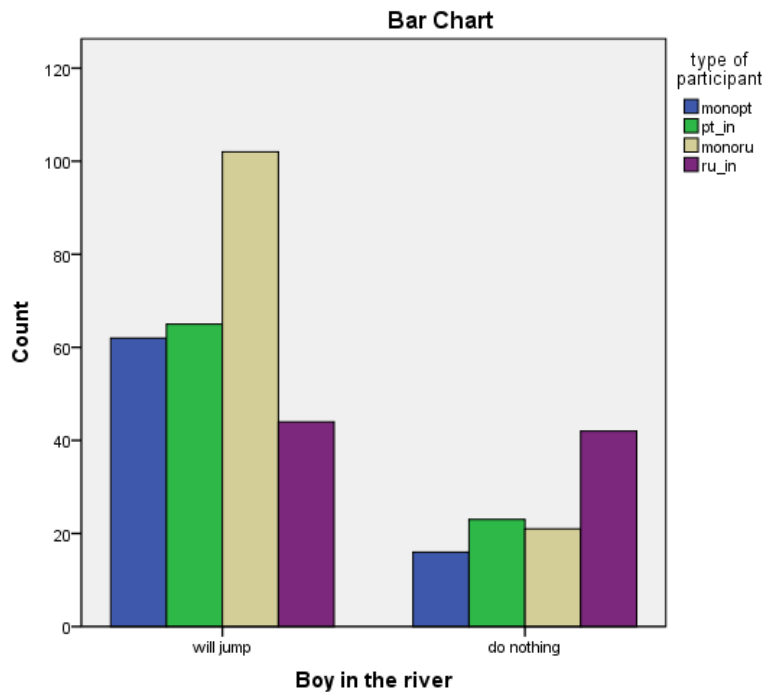
Possible choices	Portuguese, L1	Portuguese, L2	Russian, L1	Russian, L2	Total
Will jump	62	65	102	44	273
Pass by	16	23	21	42	102
Total	78	88	123	86	375

When filling in the questionnaire in mother tongue most of the participants jumped to the river to save the boy (Portuguese participants: 62 from 78, Russian participants: 102 from 123). However when we looked to the questionnaires in English, we noticed an increased number of participants who realized the real risk and passed by (Portuguese participants: 23 from 88, Russian participants: 42 from 86) (See Table 4.2.).

We also performed Chi-Square Tests to analyse the association between the four groups: both Portuguese and Russians' data in mother tongue and L2. The results of the Chi-Square tests showed ($p < 0.05$) that it is statistically improbable that the difference we have seen could have occurred by chance, i.e. there was a low chance that the difference we observed is due to the sample.

The fact that there is a difference between the groups could be also visually represented in a Bar Chart below:

Figure 4.1. *Boy in the river dilemma results within four groups distributed depending on participants' nationality and language used for answering the questionnaire*



The difference was also confirmed when we compared the sample divided for two groups: participants filling in the questionnaire in mother tongue and in L2.

Table 4.3. *Comparison of Boy in the river dilemma results within two groups distributed depending on L1 or L2 usage while answering the questionnaire*

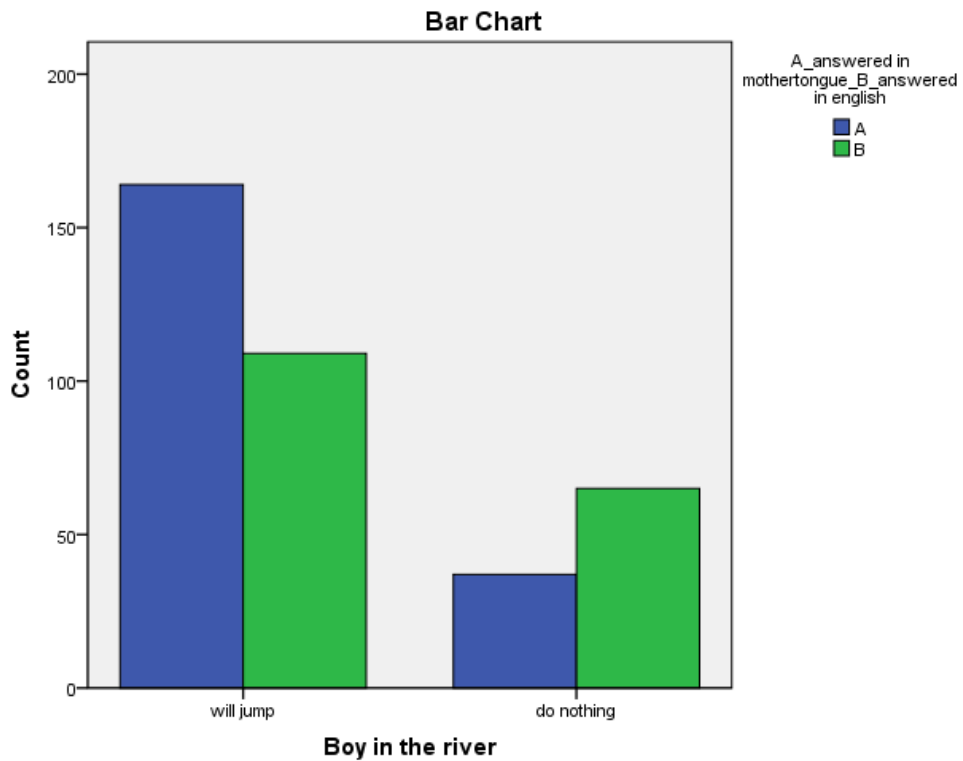
Possible choices	L1	L2	Total
Will jump	164	109	273
Pass by	37	65	102
Total	201	174	375

According to the Table 4.3., the number of participants passing by and not trying to save the boy increased for the group filling in the questionnaire in L2.

The existence of relevant difference between the groups is also confirmed by the results of Chi-Square Tests. The value of $p < 0.05$ proves that there is a difference

between the analysed groups. The visual interpretation we could represent as the following:

Figure 4.2. Comparison of Boy in the river dilemma results within two groups distributed depending on L1 or L2 usage while answering the questionnaire



To sum up the statistical results received, we got the confirmation that if answered in L2, the participants were more emotionally detached and that they made own-life-saving decisions, realizing the real risk of trying to save the boy, which corroborated our H1.

4.1.2. Giving version of the Ultimatum game

In the task to divide 501 Euros between themselves and a partner, most of the participants gave an amount close to half of the sum, with the mean value of 211.50 Euros and $SD=84.26$.

To verify if there was a significant difference between two groups of answering in L2 and mother tongue, we performed a T-test. When answering in mother tongue the

participants were slightly more generous (the mean value for participants answering in mother tongue is 220.10 Euros and for answering in English – 200.37). The results of the Independent Samples Test confirmed the difference is a valid one [$t(386)=2.30$, $p=0.02$, $p<0.05$], so we rejected H_0 , meaning that there was a statistically significant difference between the analysed groups.

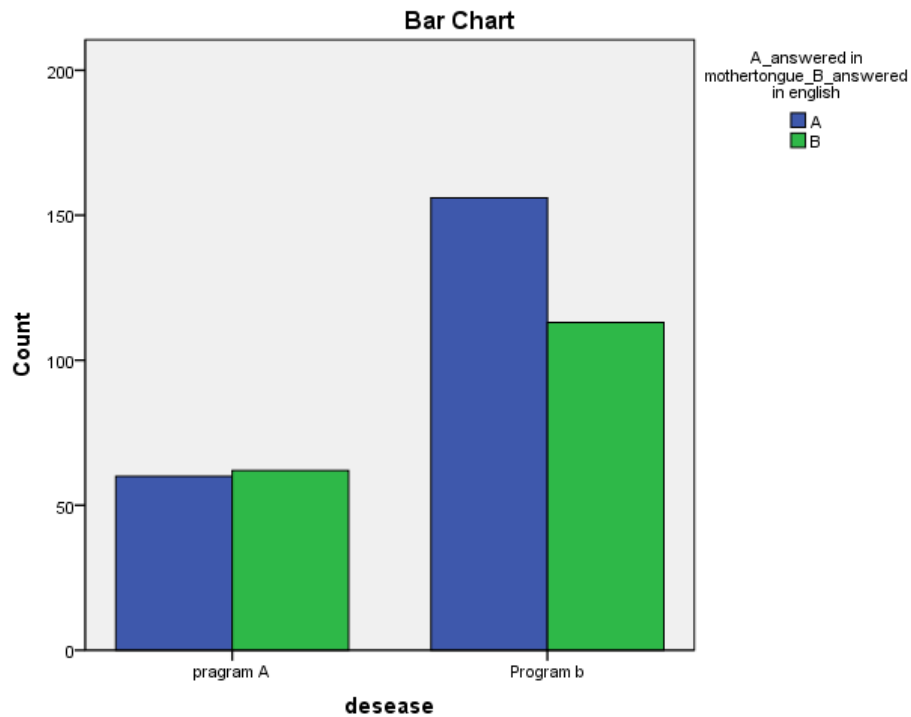
Furthermore, we analysed the four groups of Portuguese and Russian participants answering in mother tongue or L2. The Descriptive Statistics also showed that mean amount given by participants answering in English was slightly less compared to the ones answering in mother tongue (Portuguese L1: 204.91, Portuguese L2: 198.12; Russian L1: 231.31, Russian L2: 202.99).

To analyse the variances ANOVA was performed with H_0 - the mean value for all groups was the same, H_1 - the mean value for all groups was not the same. $F(3,38)=3.61$, $p=0.01$. As $p < 0.05$, we rejected H_0 , meaning that somewhere among these groups something was significantly different. To verify what was significantly different we performed Post Hoc Tests, and according to Multiple Comparisons the only significantly different groups were Portuguese answering in L2 and Russians answering in L1.

4.1.3. Asian disease

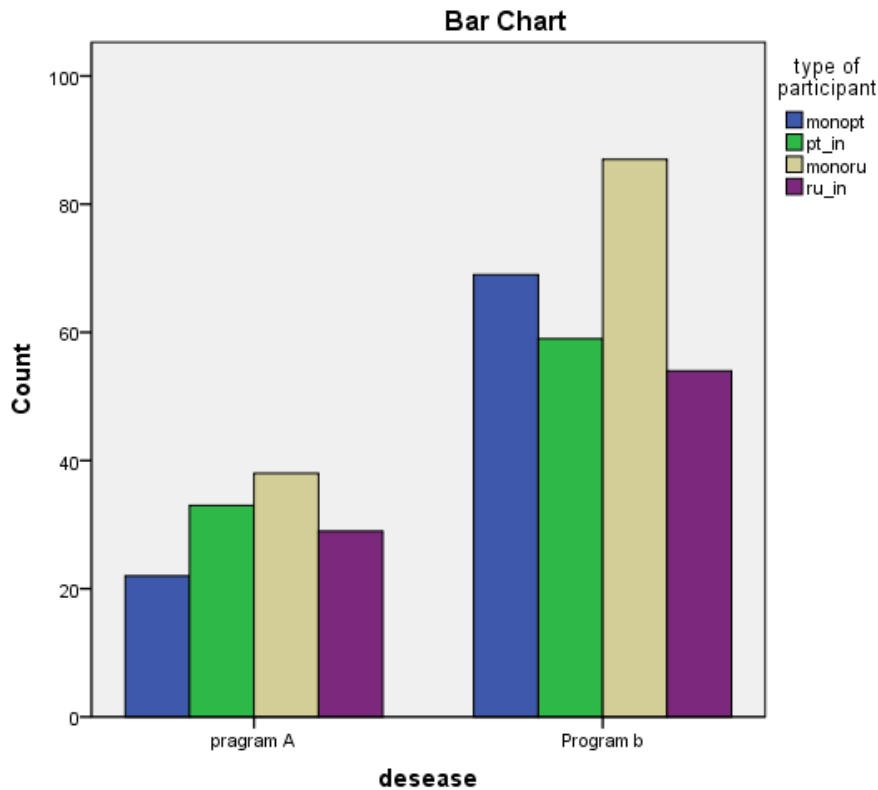
In the analyses of the negative framing version of the “Asian disease” dilemma, most of the participants chose Program B (66,1%). Firstly we analysed the associations within two groups of participants answering in mother tongue or in L2 performing a Chi-Square test: $p =0.06$, i.e. $p > 0.05$, meaning there was no significant differences between these two groups in this sample and the difference observed could be due to the sample. Graphically it could be represented as the following:

Figure 4.3. Comparison of “Asian disease” dilemma results within two groups distributed depending on L1 or L2 usage while answering the questionnaire



When we compared the four groups of Portuguese and Russian participants answering in mother tongue or L2, we verified that Program A was chosen a few more times when questionnaires were answered in English. To check if this difference was significant, we performed a Chi-Square Test: $p = 0.31$, i.e. $p > 0.05$, meaning that the difference was not statistically significant. This can be graphically reflected as the following:

Figure 4.4. “Asian disease” dilemma results within four groups distributed depending on participants’ nationality and language used for answering the questionnaire



To sum up, our H3 was observed in Portuguese answering in mother tongue and L2, but not in Russian participants, that meant that H3 was not confirmed and using L2 did not statistically significantly reduce the effect of negative framing.

4.1.4. 10-coin give some game

In the task how many coins participants would give to their partner, the most respondents opted for the 5 coins option with the mean value of 5.27.

The mean value remained the same within participants answering in mother tongue (5.42) and it was slightly less for participants answering in English (5.08). To verify if there was a significant difference between the two groups, we performed a T-test [$t(296)=1.17$, $p=0.22$, $p > 0.05$], meaning that we did not reject H1 and there were no statistically significant differences between the two analysed groups.

To verify the variances between the four groups (Portuguese and Russians answering in mother tongue and L2), we performed ANOVA. From the obtained descriptive statistics, we got the mean value was still around 5 for all the groups. To confirm this observation, we turned to the values of ANOVA with H0 – the mean value

for all the groups was the same, H1 – the mean value for all the groups was different: $F(3,39)=1.39$, $p=0.25$. Since $p>0.05$, we did not reject H_0 , meaning that there was no statistically significant difference between the mean values within the analysed groups.

5 – Discussion

The current project aimed at defining possible correlations between the decision making, emotions and language used. According to the abovementioned literature review, the possible explanation of such kind of connection was due to the emotional detachment while using L2 (Pavlenko, 2005). So we decided to verify it by using four dilemmas and within four groups, native speakers (Portuguese and Russian) and participants answering in English (Portuguese and Russian as well).

On the basis of the statistical analyses we may give the following interpretation of the results received.

To verify H1 we used the Boy in the river dilemma. As a result, participants answering in L2 opted for own-life-saving behavior that in this case meant passing by the sinking boy in the river. The statistical data showed that the difference was statistically significant. This proves that using L2 makes participants more emotionally detached to the situation described that in its turn influences the decision made.

These results correspond to the theoretical background of the differences between the mother tongue and the second language acquired. It is considered that L1 provokes greater emotional arousal than L2 and this is highly correlated with the age of acquisition and environment of learning (Pavlenko, 2006). Special attention deserves the fact that if it is acquired during early childhood, it coincides with the development of emotional regulation systems (Bloom, Beckwith, 1989). Furthermore, Pavlenko (2006) defines the threshold age – 7 years, i.e. if L2 is acquired after this age the responses of emotional arousal are to be weaker for emotional stimuli in L2. In the end the author predicts a general decline in emotional force of L2 when the age when acquired increases and proficiency decreases. Within our sample most participants acquired L2 being 7, 10, 12 years old, meaning that the acquisition took place after early years of life and possible decrease in emotional force was predicted.

To verify our H2 we used two dilemmas – giving version of an Ultimatum game and 10-coin give some game. The expected results were to have fewer amounts given to a partner by the participants answering in L2 and giving more coins as it could provide with the best benefit possible. However, the statistical analyses did not verify statistically significant difference between the groups analysed, meaning that H2 was not confirmed.

This ultimatum bargaining game was initially developed by economists to test the theoretical assumption that utility maximization can be equated with maximizing personal monetary payoffs (Guth et al., 1982). The first assumption according to the equilibrium analysis is that Player 1 should offer Player 2 the smallest possible positive amount, and Player 2 should accept it as it is already more than 0. However, the further research has proved that these predictions fail in reality (Camerer, Thaler, 1995; Guth, Tietz, 1990).

Lots of theories try to explain this not-correspondence to the initial assumption: equity theory (e.g., Adams, 1965; Walster, Walster, & Berscheid, 1978), the equality rule (Handgraaf et al., 2003; van Dijk & Vermunt, 2000), distributive justice (Törnblom, 1992), social utility model (Blount, 1995; Loewenstein, Thompson, & Bazerman, 1989; Messick & Sentis, 1983). The assumption is that the proposer is driven by social norms of fairness and out of fear that a lower offer will be rejected (Kahneman, Knetsch, & Thaler, 1986). In brief, the extant state of the literature would suggest that individuals are driven by self-interest to a certain extent (e.g., Fellner & Güth, 2003; Kagel, Kim, & Moser, 1996; van Dijk, De Cremer, & Handgraaf, 2004) (cit. from Franco-Watkins et al., 2013). According to our H2 we expected this self-interest to be higher for participants answering in L2 compared with those filling in the questionnaire in mother tongue.

In terms of 10-coin give some game, the participants answering in L2 were expected to have higher level of self-interest. This dilemma is also highly used in empirical studies (Nelissen et al., 2007; Martinez, 2011) and the most selfish result possible is to keep all the coins for yourself, or most beneficial, but risky one is to give all your coins to the partner and to expect from him the same behavior. Within our sample the prevailing result appeared to be half of the coins, which did not have an added value to the research.

To verify H3 we used a loss-frame version of “Asian disease” dilemma. Expected results were to have more participants answering in English opting for negatively framed option. In spite the fact, within descriptive statistics we could see that the negatively framed option was chosen more often, subsequent statistical analysis showed that there was no significant difference within the analysed groups, that meant that the observed descriptive differences could have occurred by chance due to the sample itself.

In other words, we confirmed that the fact of using L2 could be emotionally significant for decision making, i.e. there is a possibility of existing a correlation between language used and a decision made when the decision is concerned personally the respondent, and that this possibility of influence is less when we turn to abstract subjects.

We must acknowledge that this project had few methodological limitations. First of all, the sample was extremely heterogeneous from the point of view of age of participants (from students to retired), that could affect mean values obtained.

One more limitation is connected with the environment participants are while filling in the questionnaire. This factor is impossible to control when using online means of communication, but even when distributing personally, answers could be influenced by the contextual circumstances.

With this project we aimed at extending the understanding of the processes of decision making, its connection with emotions as a consequence of the language used. However, there are still more specific areas for development. For the future research we would consider interesting to verify more specific differences within L2 users depending on the level of proficiency in L2 that also could affect the process of decision making.

One more possible field for exploring is the possibility of comparing of L2 users living in the same country with those immigrated to another. As in this case the higher frequency of usage L2 combined with the stressful consequences of changing the country and going through the acculturation process could have its resonance on the process of decision making as well.

The current research was one of the attempts to better understand the connection between bilingualism, emotions and decision making, and we hope with this study we contributed to both psychological and linguistics domains, leaving more space for improvement and further research.

6 - BIBLIOGRAPHY

- Arsenian, S. (1945). Bilingualism in the post-war. *Psychological Bulletin*, 42(2), 65-86.
- Baker, C. (1996). *Foundations of bilingual education and bilingualism. Bilingual education and bilingualism 1* (2nd ed.). Clevedon: Multilingual Matters.
- Bialystok E., Craik F.I.M., & Luk G. (2012). Bilingualism: consequences for mind and brain. *Trends in Cognitive Sciences*, 16(4), 240-250.
- Bialystok E., & Barac R. (2012). Emerging bilingualism: Dissociating advantages for metalinguistic awareness and executive control. *Cognition*, 122, 67–73.
- Bialystok E, Craik F.I.M, & Freedman M. (2007). Bilingualism as a protection against the onset of symptoms of dementia. *Neuropsychologia*, 45(2), 459-464.
- Bloom, L., & Beckwith, R. (1989). Talking with feeling: Integrating affective and linguistic expression in early language development. *Cognition and Emotion*, 3, 313-342.
- Camerer, C. F. & Thaler, R. (1995). Anomalies: Dictators, ultimatums, and manners. *Journal of Economic Perspectives*, 9, 209-219.
- Craik F.I.M., Bialystok E, & Freedman M. (2010). Delaying the onset of Alzheimer's disease: Bilingualism as a form of cognitive reserve. *Neurology*, 75(19), 1726-1729.
- Cross C. U. (2004). The Competitive Advantage of Foreign Languages and Cultural Knowledge. *The Modern Language Journal*, 88(3), 351-373.
- De Groot, A. M. B., Borgwaldt, S., et al. (2002). Lexical decision and word naming in bilinguals: Language effects and task effects. *Journal of Memory and Language*, 47, 91–124.
- Diaz, R.M. (1983). Thought and two languages: The impact of bilingualism on cognitive development. *Review of Educational Research*, 10, 23–54.
- Ervin, S. (1954, 1973). *Identification and bilingualism*. In A.Dil (Ed.) *Language acquisition and communicative choice*. Essays by Susan M. Ervin-Tripp (1-14). Standford, CA: Standford University Press.
- Franco-Watkins A.M., Edwards B.D. & Acuff R.E. (2013). Effort and Fairness in Bargaining Games. *Journal of Behavioral Decision Making*, 26, 79-90.
- Garbin G., Sanjuan A., Forn C., Bustamante J.C., Rodriguez-Pujadas A., Belloch V., Hernandez M., Costa A. & Avila C. Bridging language and attention: Brain basis of the impact of bilingualism on cognitive control. *NeuroImage*, 53, 1272–1278.
- Gollan, T. H., Slattery, T. J., et al. (2011). Frequency drives lexical access in reading

but not in speaking: the frequency-lag hypothesis. *Journal of Experimental Psychology: General*, 140(2), 186–209.

Grassian, V. (1981, 1992). *Moral Reasoning: Ethical Theory and Some Contemporary Moral Problem*. New Jersey: Prentice - Hall, Inc.

Grosjean, F. (2010). *Bilingual: Life and Reality*, Harvard University Press.

Guth, W., Schmittberger, R., & Schwarze, B. (1982). An experimental analysis of ultimatum bargaining. *Journal of Economic Behavior and Organization*, 3, 367-388.

Guth W., & Tietz R. (1990). Ultimatum Bargaining Behavior: A Survey and Comparison of Experimental Results, *Journal of Economic Psychology*, 11, 417-449.

Hakuta, K., & Diaz, R.M.. (1985). The relationship between degree of bilingualism and cognitive ability: A critical discussion and some new longitudinal data. *Children's Language*, 5, 319–344.

Han W. (2010). Bilingualism and socioemotional well-being. *Children and Youth Services Review*, 32, 720–731.

Hartsuiker R.J., Costa A., & Finkbeiner M. (2008). Bilingualism: functional and neural approaches. *Acta Psychologica* 128 (3), 413-415.

Leliveld, M. C., Van Dijk, E., & Van Beest, I. (2008). Initial ownership in bargaining: Introducing the giving, splitting, and taking ultimatum bargaining game. *Personality and Social Psychology Bulletin*, 34, 1214-1225.

Luna, D., Ringberg, T. & Peracchio, L. (2008). One individual, two identities: Frame switching among biculturals. *Journal of Consumer Research*, 35(2), 279-293.

Martin C. D., Costa A., Dering B., Hoshino N., Wuc Y.J & Thierry G. (2012). Effects of speed of word processing on semantic access: The case of bilingualism. *Brain & Language*, 120, 61–65.

Nelissen, R. M. A., Dijk, A. J. M., & Vries, N. K. (2007). How to turn a hawk into a dove and vice versa: Interactions between emotions and goals in a give-some dilemma game. *Journal of Experimental Social Psychology*, 43(2), 280-286

Pavlenko A. (2002). Bilingualism and emotions. *Multilingua*, 21 (1), 45-78

Pavlenko A. (2005). *Emotions and Multilingualism*. Cambridge University Press, New York.

Pavlenko A. (2006). *Bilingual minds: Emotional experience, expression, and representation*. Clevedon: Multilingual Matters.

Peal, E. & Lambert, W. (1962). The relation of bilingualism to intelligence. *Psychol. Monogr.* 76, 1–23.

- Portes, A., & R. Schauffler (1994). Language and the 2nd generation: Bilingualism yesterday and today. *International Migration Review*, 28, 640–61.
- Schwarz, N., Bless, H., & Bohner, G. (1991). Mood and persuasion: Affective states influence the processing of persuasive communications. *Advances in Experimental Social Psychology*, 24, 161-199.
- Siegal, M., Iozzi, L. & Surian, L. (2009). Bilingualism and conversational understanding in young children. *Cognition*, 110 (1), 115-122.
- Tversky, A., Kahneman, D. (1981). The Framing of Decisions and the Psychology of Choice, *Science*, 211, 453-458.
- Weinreich, U. (1953). *Languages in contact: Findings and problems*. The Hague.
- Zeelenberg, M., Van Dijk, W. W., Manstead, A. S. R., & Van der Pligt, J. (1998). The experience of regret and disappointment. *Cognition and Emotion*, 12, 221-230.
- Zeelenberg, M. & Pieters, R. (2006). *Feeling is for doing: A pragmatic approach to the study of emotions in economic behavior*. In D. de Cremer, M. Zeelenberg & K. Murnighan (eds.), *Social Psychology and Economics* (pp.117-137). Mahwah, NJ: Erlbaum.

7 – Appendix

7.1. Cover Letter for E-Mailed Questionnaire

Dear Respondent,

I am a student of the Lisbon *University* Institute ISCTE-IUL, at the *Department of Social and Organizational Psychology, at the Specialty the Psychology of Emotions*, I am conducting a study examining the connection between the process of decision making and the language we use while deciding, under the supervision of Professor Carla Moleiro.

We would like to ask you for collaboration in filling out a questionnaire which focuses on your language skills, both mother tongue and foreign languages acquired, and on decision making, where you are asked to make a decision on how to react in a described situation.

We would like to emphasize that your participation in this study is voluntary and all efforts to protect your identity and keep the information confidential will be taken.

We have enclosed a consent form for your review. Please read the form and feel free to contact me if you have any questions about the study. If you choose to participate, please sign, initial and date the consent information form and return it along with the completed questionnaire.

I look forward to hearing from you. Your participation will be greatly appreciated.

Sincerely,

Svetlana Bilous

bilous.svetlana@gmail.com

00 351 914 539 712

7.2. Consent Form

You are being invited to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please take the time to read the following information carefully. Please ask the researcher if there is anything that is not clear of if you need more information.

The research is connected with defining the connection between the languages the participant uses, his/her proficiency in them and the process of decision making. The study will focus on verifying if the language that we use while decision making can influence the type of the decision taken.

You are to fill in the questionnaire attached, that will take you about 15 min. The questions are connected with the number of languages you know, conditions when they were acquired, your self-evaluated level of proficiency and the decision-making dilemmas with further task to translate one of the dilemmas to your mother tongue.

Only the researcher has access to contact information and responses. Your responses will be recorded on a form that contains a code number created by the researcher. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will not be disclosed.

No physical, social or economic risks are posed to participants.

No benefits accrue to you for answering the survey, but your responses will be used to obtain empirical results for the study under discussion and are of crucial importance for our research. Any discomfort or inconvenience to you derives only from the amount of time taken to complete the survey.

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you do decide to take part in this study, you are asked to sign this consent form. If you decide to take part in this study, you are still free to withdraw at any time and without giving a reason. You are free to not answer any question or questions if you choose. This will not affect the relationship you have with the researcher.

Further information regarding the research can be obtained from the principal researcher.

By signing this consent form, I confirm that I have read and understood the information and I am more than 18 years old. I understand that my participation is

voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I voluntarily agree to take part in this study.

Signature _____ Date _____

7.3. Questionnaire in English

Please, answer the following questions. Put X when you agree with the statement:

1. Sex:

M___ F___

2. Age _____

3. Education:

Middle School_____

Secondary school_____

Bachelor_____

Master_____

PhD_____

Other_____

4. Marital status:

Single_____

Married___

Divorced___

Widow_____

Other_____

5. Are you currently studying? Yes___ No ___

Area?_____

6. Are you currently working? Yes___ No ___

Profession_____

7. Years of job experience_____

8. Nationality _____

9. Country of residence_____

10. What is your mother tongue?_____

11. What other foreign languages do you know?

12. What is the second language according to the level of your proficiency?

13. How often do you use your mother tongue in day-to-day environment?

- Never _____
- Rarely _____
- Sometimes _____
- Often _____
- Always _____

14. How often do you use your mother tongue in working/studying environment?

- Never _____
- Rarely _____
- Sometimes _____
- Often _____
- Always _____

15. How old were you when you started to learn the second language?_____

16. Where did you learn your second language?

- At home _____
- At school _____
- At language course _____
- By yourself or with the help of friends _____
- Other _____

17. How often do you use your second language in day-to-day environment?

- Never_____
- Rarely_____
- Sometimes_____
- Often _____
- Always_____

18. How often do you use your second language in working/studying environment?

- Never_____
- Rarely_____
- Sometimes_____
- Often _____
- Always_____

19. How proficient you are in your second language?

- Beginner_____
- Elementary_____
- Pre-Intermediate_____
- Intermediate_____
- Upper-Intermediate_____
- Advanced_____
- Proficient_____

20. Dilemma 1. Please, read carefully and decide on what your actions would be.

You are walking in the forest near a river in the mountains in the early spring. You cannot swim, but you like this forest and the river is beautiful. You are passing by a deserted pier from which a teenager had apparently fallen in to the water. The boy is screaming for help, away from the margin of the river, so you cannot reach him. The water is cold. The current in the river is strong.

Would you jump into the water trying to save the boy, but with a risk of dying by yourself ? _____

Would you pass by without stopping and knowing that the boy may die? _____

21. Dilemma 2. Please, read carefully and decide on what your actions would be.

You [the proposer] are about to make a deal that will yield you a small amount of money, in this case 501 Euros. However, a colleague of yours [the responder] was the one who made the whole deal possible, so (s)he is waiting for a gratification. Thus, if your partner is not satisfied with your gratification (s)he will make the deal impracticable.

First, you will decide on the gratification and tell it to your partner. Once you have made your offer, you cannot change it. Then, your partner will accept or reject your offer. If (s)he accepts it, the deal will succeed and both of you will divide the money according to your proposal. If (s)he rejects it, the deal will not succeed and both of you will get nothing.

What is the gratification you give? _____

22. Dilemma 3. Please, read carefully and decide on what your actions would be.

Imagine that PORTUGAL is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows.

Program A: If Program A is adopted 400 people will die.

Program B: If Program B is adopted there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die.

Which of the two programs would you favor?

- Program A _____

- Program B _____

23. Dilemma 4. Please, read carefully and decide on what your actions would be.

You are playing a game with the partner who is sitting next to you. In this game, both of you have ten special coins. Each of your coins is worth 5Euro for you, but their value doubles (10Euros) for your partner. The same applies to your interaction partner: (s)he also has ten special coins, each worth 5Euro for

(her)himself and 10Euro for you. You have to decide simultaneously how many coins to give one another without knowing the other person's decision.

How many coins will you give to your interaction partner? _____

24. Please, choose one of the dilemmas and translate it to your mother tongue.

Thank you for participation!

7.4. Questionnaire in Russian

Ответьте, пожалуйста, на следующие вопросы. Поставьте X, если вы согласны с утверждением:

1. Пол

М___ Ж___

2. Возраст _____

3. Образование:

Среднее (9 классов) _____

Полное среднее _____

Бакалавр _____

Магистр _____

Аспирантура _____

Другое _____

4. Семейный статус

Незамужняя/Неженат _____

Замужем/Женат _____

Разведен(а) _____

Вдова/Вдовец _____

Другое _____

5. Вы сейчас учитесь? Да ___ Нет ___

Факультет _____

6. Вы сейчас работаете? Да ___ Нет ___

Профессия _____

7. Стаж работы _____

8. Национальность _____

9. Какой ваш родной язык? _____

10. Какие другие иностранные языки вы знаете?

11. Какой язык является вторым по уровню владения языком? _____

12. Как часто Вы используете родной язык в каждодневной жизни?

- Никогда _____
- Редко _____
- Иногда _____
- Часто _____
- Всегда _____

13. Как часто Вы используете родной язык в рабочих/учебных условиях?

- Никогда _____
- Редко _____
- Иногда _____
- Часто _____
- Всегда _____

14. Сколько Вам было лет, когда Вы начали изучать второй язык? _____

15. Где Вы изучали второй язык?

- Дома _____
- В школе _____
- На языковых курсах _____
- Сам(а) или с помощью друзей _____
- Другое _____

16. Как часто Вы используете второй язык в каждодневной жизни?

- Никогда _____
- Редко _____

- Иногда_____
- Часто _____
- Всегда_____

17. Как часто Вы используете второй язык рабочих/учебных условиях?

- Никогда_____
- Редко_____
- Иногда_____
- Часто _____
- Всегда_____

18. Насколько хорошо Вы владеете вторым языком?

- Начальный_____
- Элементарный_____
- Подготовительный средний_____
- Средний_____
- Высший средний_____
- Продвинутый_____
- Профессиональный_____

19. Дилемма 1. Пожалуйста, прочтите внимательно и решите, каковыми будут Ваши действия.

Вы прогуливаетесь по лесу возле реки в горах ранней весной. Вы не умеете плавать, но вам нравится этот лес, и речка очень красивая. Вы проходите вдоль одинокого пирса, с которого, очевидно, в воду упал подросток. Он кричит и зовет на помощь, но он уже возле противоположного берега реки, так что вы не можете к нему дотянуться. Вода холодная. Течение в реке очень сильное.

Прыгните ли Вы в реку, пытаясь спасти подростка, но рискуя утонуть самому(ой)? _____

Пройдете ли Вы мимо, не останавливаясь и зная, что подросток может утонуть? _____

20. Дилемма 2. Пожалуйста, прочтите внимательно и решите, каковыми будут Ваши действия.

Вы (дающий) собираетесь заключить выгодную сделку, которая вам принесет определенную прибыль в 501 евро. Однако данная сделка стала возможной только благодаря усилиям одного вашего коллеги (отвечающего), поэтому он ждет вознаграждения. При этом ваш партнер должен остаться довольным вознаграждением, ибо если он не будет доволен, то отменит сделку.

Во-первых, Вы решите, какое вознаграждение вы дадите партнеру и скажите ему. Как только вы назовете сумму, решение уже нельзя будет поменять. После этого Ваш партнер согласится или откажется от вознаграждения. Если он (она) согласится, сделка состоится, и вы оба разделите прибыль, как Вы ранее предложили. Если он (она) откажется, сделка не состоится, и никто не получит ничего.

Какое вознаграждение Вы дадите? _____

21. Дилемма 3. Пожалуйста, прочтите внимательно и решите, каковыми будут Ваши действия.

Представьте, что Украина готовится к эпидемии неизвестной болезни из Азии, и ожидается, что умрет 600 человек. Были предложены две альтернативные программы для ее предотвращения. Ученые считают, что последствия каждой из них могут быть следующими:

Программа А: Если применить программу А, то 400 человек погибнет.

Программа Б: Если применить программу Б, то существует возможность 1/3, что никто не умрет, и возможность 2/3, что умрут 600 человек.

Какую из этих программ Вы выберете?

- Программа А _____
- Программа Б _____

22. Дилемма 4. Пожалуйста, прочтите внимательно и решите, каковыми будут Ваши действия.

Вы играете в игру с партнером, который сидит рядом с Вами. В этой игре у каждого из Вас есть по 10 специальных монет. Каждая монета равна 5 евро, но стоимость вашей монеты в руках партнера удваивается (10 евро). То же касается и вашего партнера: он(а) также имеет 10 специальных монет, каждая стоимостью 5 евро для него(ее) и 10 евро для вас. Вам одновременно нужно решить, сколько Вы дадите один(на) другому(ой), не зная заранее решение друг друга.

Сколько монет Вы дадите своему партнеру по игре? _____

Спасибо за участие!

7.5. Questionnaire in Portuguese

Por favor, responda às seguintes perguntas, marcando a sua escolha com um X ou preenchendo a sua resposta:

1. Sexo

M___ F___

2. Idade _____ (em anos)

3. Habilitações Literárias:

Ensino Elementar ou Preparatório_____

Ensino Secundário_____

Licenciatura_____

Mestrado_____

Doutoramento _____

Outro_____

4. Estado civil:

Solteiro_____

Casado_____

Divorciado_____

Viúvo_____

Outro_____

5. É estudante? Sim_____ Não _____

Se sim, em que área?_____

6. Está a trabalhar neste momento? Sim_____ Não _____

Se sim, escreva a sua profissão_____

7. Anos da experiência de trabalho_____

8. Nacionalidade_____

9. País de residência_____

10. Qual é a sua língua materna?_____

11. Que outras línguas sabe?

12. Qual é a sua segunda língua em termos de nível de domínio?

13. Quão frequentemente utiliza a sua língua materna no dia-a-dia?

- Nunca_____
- Raramente_____
- Às vezes_____
- Frequentemente _____
- Sempre_____

14. Quão frequentemente utiliza a sua língua materna no trabalho/estudo?

- Nunca_____
- Raramente_____
- Às vezes_____
- Frequentemente _____
- Sempre_____

15. Com que idade começou a aprender a sua segunda língua?_____ (em anos)

16. Como aprendeu a sua segunda língua?

- Em casa_____
- Na escola_____
- Em cursos de línguas _____
- Por si próprio ou com ajuda de amigos_____
- Outros_____

17. Quão frequentemente utiliza a sua segunda língua no dia-a-dia?

- Nunca _____
- Raramente _____
- Às vezes _____
- Frequentemente _____
- Sempre _____

18. Quão frequentemente utiliza a sua segunda língua no trabalho/estudo?

- Nunca _____
- Raramente _____
- Às vezes _____
- Frequentemente _____
- Sempre _____

19. Qual é o nível da sua segunda língua?

- Iniciado _____
- Elementar _____
- Pré-intermédio _____
- Intermédio _____
- Intermédio-avançado _____
- Avançado _____
- Proficiente _____

20. Dilema 1. Leia cuidadosamente o seguinte texto e decida qual seria a sua ação

Está a caminhar numa floresta perto de um rio, numa montanha, no início da primavera. Não sabe nadar, mas gosta desta floresta e o rio é extremamente bonito. Passa por um pontão deserto no rio do qual um adolescente aparentemente caiu à água. O rapaz grita por socorro, longe da margem do rio, e por isso não consegue alcançá-lo. A água está fria. O rio tem uma corrente forte.

Saltaria para a água para salvar o rapaz, arriscando morrer você próprio? _____

Passaria pelo pontão sem parar, sabendo que o rapaz poderia morrer? _____

21. Dilema 2. Leia cuidadosamente o seguinte texto e decida qual seria a sua ação
Você (o proponente) está prestes a fazer um negócio do qual resultará uma pequena quantia de dinheiro, 501 Euros. Contudo, um colega seu (o respondente) foi quem tornou possível todo o negócio, e por isso o seu colega espera uma gratificação. Assim, se o seu colega não ficar satisfeito com a gratificação, o negócio não será feito.

Primeiro, você decidirá no valor da gratificação e comunicá-la-á ao seu colega. Assim que fizer a sua proposta, não poderá alterá-la. De seguida, o seu colega aceitará ou rejeitará a sua oferta. Se aceitar, o negócio será realizado e ambos dividirão o dinheiro segundo a sua proposta de gratificação. Se rejeitar, o negócio não será realizado e ninguém receberá qualquer dinheiro.

Que gratificação irá propor?_____

22. Dilema 3. Leia cuidadosamente o seguinte texto e decida qual seria a sua ação
Imagine que o seu país se está a preparar para um surto de uma doença Asiática rara, que se prevê que mate 600 pessoas. Foram propostos dois programas alternativos para combater a doença. Assuma que as seguintes estimativas são cientificamente exatas.

Programa A: Se o programa A for adotado, 400 pessoas morrerão.

Programa B: Se o programa B for adotado, existe a probabilidade de 1/3 de ninguém morrer, e 2/3 de 600 pessoas morrerem.

Que programa defenderia?

- Programa A_____

- Programa B_____

23. Dilema 4. Leia cuidadosamente o seguinte texto e decida qual seria a sua ação
Está a jogar um jogo com o seu parceiro, que está sentado ao seu lado. Neste jogo, você e o seu parceiro têm 10 moedas cada um. Cada uma das suas moedas vale 5 Euros para

si, mas o seu valor duplica (para 10 Euros) para o seu parceiro. O mesmo se aplica para as moedas do seu parceiro: o seu parceiro também tem 10 moedas, cada uma valendo 5 Euros para ele e 10 Euros para si. Os dois têm de decidir simultaneamente quantas moedas dar ao outro sem saber a decisão da outra pessoa.

Quantas moedas dará ao seu parceiro de jogo? _____

Obrigada pela participação!