

# The relationship between Theory of Mind and Generosity with age involvement.

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## ABSTRACT

Theory of Mind (ToM) is the ability to read and understand other people's intentions and needs. Recently ToM has been associated with people's ability to show generosity to other people. This latter finding is the main topic of this dissertation. More specifically this dissertation focuses on people's ability to engage in ToM at an early stage in life and how this is related to their generosity. Such a research question is important because the orientations that people develop at an early stage of their life, affect their behavior and their personalities also later in life. For Marketers such a study might be of a great relevance because what people learn at the young age also may show up in how they behave themselves in a business context, such as in marketing and selling positions. The first study on this subject has been done in US and later on replicated in the Netherlands. Those researches have shown that the relationship between ToM and generosity is not always consistent. The goal of this study is to focus on these inconsistencies by replicating the US study using a sample of children from Greece. During the replication study we found that ToM and generosity are not correlated. However this study shows that the correlation between ToM and generosity is moderated by the age of children. This might indicate that children's cognitive and emotional development is affected by the age. This study adds a new perspective to the discussion about how ToM and generosity are related. Implications of Marketing are discussed in the end of this dissertation.

**Keywords:** Theory of Mind, generosity, age, replication study, Greece

# CONTENTS

<b>PREFACE</b> .....	3
<b>INTRODUCTION</b> .....	4
<b>THEORETICAL FRAMEWORK</b> .....	7
Theory of Mind .....	7
Generosity .....	12
Social environment.....	16
<b>METHODS</b> .....	18
Participants.....	18
Procedure .....	18
<b>MEASURES</b> .....	19
Theory of Mind .....	19
Generosity .....	19
Socioeconomic Status (SES) .....	20
Siblings and position.....	21
<b>RESULTS</b> .....	22
<b>DISCUSSION</b> .....	26
<b>PRACTICAL IMPLICATIONS</b> .....	29
Business implications: Theory of mind as marketing tool for salespeople and branding. ....	29
Business implications: management and employees .....	31
<b>ACKNOWLEDGMENTS</b> .....	32
<b>BIBLIOGRAPHY</b> .....	32
<b>APPENDIX</b> .....	36

## PREFACE

Aikaterini Tzouvara and Christina Kegkou (myself), two master students of the Marketing department of Erasmus School of Economics replicated the US study about the relationship between ToM and generosity conducted by Cowell et al. (2015). This study has also been replicated by Wessels and Vuylsteke (2015) and by Annique Vaessen and Michelle de Vries (2016) in the Netherlands. Tzouvara and myself, are part of this replication study in Greece. This dissertation is a reflection of the replication study of Tzouvara and myself, where we both collected data using the same methods as Cowell et al. (2015) applied, but in Greece. After collecting the data, we focused in different results. Tzouvara focuses on the gender as a differentiator in the relationship between generosity and ToM, while this dissertation is based on the age, as a factor that plays an important role in generosity for children that possess ToM.

This paper proves statistically that the higher the ToM and age are, the less kids become generous.

I would like to thank my supervisor Professor Willem Verbeke, who gave me great guidance and directions especially in the building of the hypothesis and funded our trip to Greece so we could collect different social background data. A great gratitude also to my co-reader Professor Nuno Camacho as well as to the schools in Greece, three in Thessaloniki and two in Igoumenitsa, and the children that participated in the experiment.

## INTRODUCTION

People are social species that develop functional and social skills in a very early stage of their lifetime. In this study, I focus on one specific skill which is social cognition. Social cognition is a sub-topic of social psychology that refers to the mental operations that influence the social behavior of people and is strongly associated with ToM (Fett, et al., 2011).

Social cognition, which is highly connected with the social functioning of people's behavior, can be developed even in the first year of people's life (Kuhlmeier, Wynn, & Bloom, 2003). The abovementioned study has found evidence that 12-month-old infants do have some understanding of goal-related behavior of other people.

Fairness and altruism, which are strongly connected to generosity, do also emerge in a very young age. Fairness is defined as "the situation where two or more individuals have equally enjoyed the benefits of one activity" (Shure, 1968). Altruism is defined as helping others with a personal cost (Sober, 2002). Generosity is described as the "liberality in giving" to someone more than he expects or needs. Therefore, generosity is a subset of altruism (Zak, Stanton, & Ahmadi, 2007). A research suggested that 15-month-old infants acquire egalitarian motives, and can have a basic sense of fairness and altruism. (Schmidt & Sommerville, 2011). Two recent experiments conducted in 2012 gave more insights about the fairness in young children. Infants from 19 and 21-month-old were observed by their reaction to the experimenter on how he will distribute resources and rewards to other individuals. These experiments indicated that children at that age are already quite sensitive to fairness (Sloane, Baillargeon, & Premack, 2012).

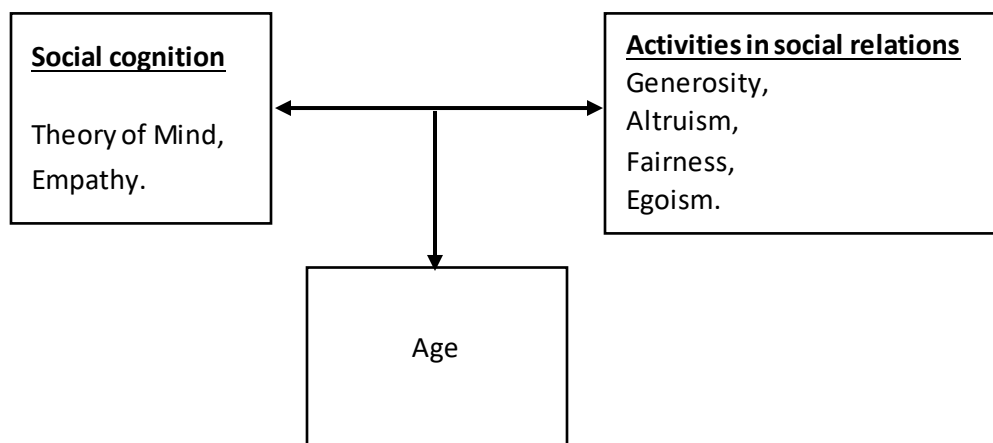
Humans are not only altruistic, but they also frequently tend to be egoistic and benefit other humans. Children seem to have a strong sense of reciprocity when they are 5 years old, however when they are younger and more specific from the 3<sup>rd</sup> year of their life, they have a tendency toward self-maximizing (Robbins & Rochat, 2011). Two similar studies revealed that children between 3-4 years act more selfishly and share less resources while in the age of 7-8 years, children's sharing behavior tend to become more equal to distribution. (Fehr, Bernhard & Rockenbach, 2008), (Cowell, Samek, List, & Decety, 2015).

Sharing behavior, which is a function that measures generosity, is strongly correlated with ToM. There are two studies with quite controversial content, but still both prove that ToM is connected with generosity.

1. Takagishi et al. (2010) from the one hand support that preschoolers who had acquire ToM, thus possess the ability to understand how others feel and think, seem to share more than those who do not have ToM. This suggest that the ability to infer in mental states of others plays an important role in children's fairness-related behavior. This study also supports that children who acquire ToM can more easily predict what kind of offer other people would accept. (Takagishi, Kameshima, Schug, Koizumi & Yamagishi, 2010).
2. Cowell et al. (2015) found that children with ToM, when there are no consequences for keeping all the resources for themselves, can better recognize an opportunity for strategic gain at no cost to the self. Hence, if this occurs, children with ToM are more selective in their sharing behavior and they tend to share less with unknown peers. (Cowell, Samek, List, & Decety, 2015)

Vuylsteke and Wessels (2015), replicated Cowell’s et al. (2015) study from US, in the Netherlands. However, they did not find any correlation between ToM and generosity of children. One of the reasons could be that Europeans and Americans have different education and social background. Another possible explanation can be the socioeconomic status (SES) of the children. Cowell’s et al. (2015) study indeed took place in poorer socioeconomic areas compared to the Dutch research that performed in more wealthy socioeconomic environments. Therefore, in 2016 de Vries and Vaessen, repeated the research in both high and low socioeconomic areas in the Netherlands in order to prove if the relationship between ToM and generosity correlates with parents’ income and school-based social involvement. Indeed, both found that there is no significant relationship between ToM and generosity, however they found that this relationship is moderated by school and family.

Taken all together, it is clear that ToM and generosity are correlated even if the directionality of the relation is ambiguous. This study, gathered data in both high and low socioeconomic areas in Greece. This study supports that the age of children who possess ToM is a fact that should be included in this model. The older that children who have ToM are, the less altruistic they behave (see figure 1).



**Figure 1: Theoretical construct**

# THEORETICAL FRAMEWORK

## Theory of Mind

According to Premack and Woodruff (1978), ToM is a social skill that enables people to infer into the mental states of others, based on the knowledge that is available. Mental states can be beliefs, intentions, desires, perspectives, knowledge etc. Scientists and researchers are more interested in exploring ToM the last two decades after the research that two primatologists published, called “Does the chimpanzee have ToM?” (Premack & Woodruff, 1978). This research is related to whether or not ToM is a specifically human ability and tried to reveal if chimpanzees have the ability to infer mental states of others. What they found is that chimpanzees understand the goals and intentions of others, but they cannot understand the false belief task. The false belief task is one of the basic milestones in the ToM development and is better explained below. The ability that people have to deceive, cooperate, emphasize and read others’ body language, which is connected with their social cognition, is what differentiate people from other primates (Frith, Gallagher, & Frith, 2003).

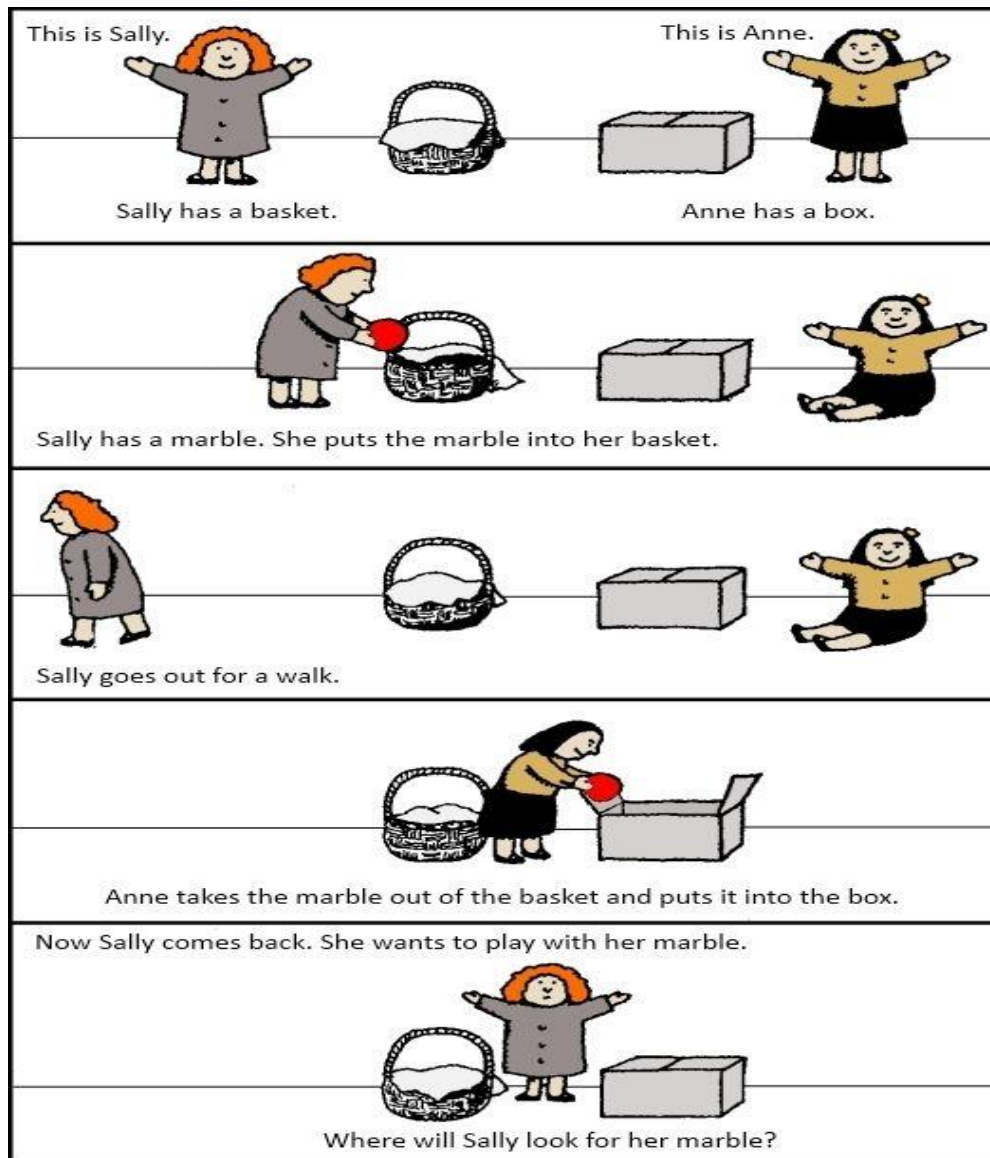
In order to test if someone acquires ToM, psychologists developed the False Belief task. False belief refers to the ability that people have to understand that other people may have different intentions or mental states compared to oneself and that some mental states may differ from reality for several reasons. Children start to develop the ability to reason several mental states like beliefs and false beliefs between 3 and 5 years old (Wellman, Cross, & Watson, 2001). Humans tend to explain others’ behavior on the basis of their mind, their beliefs, their knowledge, and their

desires. Having the mental ability to understand that someone's belief may be different from oneself indicates whether someone is able to pass the false belief task and acquire ToM (Wimmer & Refner, 1983). Numerous versions of false belief task have been revealed, all based in the initial task done by Wimmer and Perner (1983). One of these versions is explained through an illustrative example: (see figure 2).

Sally first placed a marble into her basket. Then she left the room, and Anne transferred the marble and hidden it in her box. Anne then left the room. When Sally returned, the experimenter asked the critical Belief Question: "Where is the marble?" Remember that Sally has no knowledge that the marble is replaced. Children that answered that the marble is the basket passed the false belief task, which means that they have ToM. Those who answered that the marble is the box, failed the false belief task, hence they do not acquire ToM.

Apparently some children cannot put themselves into Sally's shoes which requires mental effort. They cannot infer into Sally's mental state and understand that her perspective is different from reality. ToM may emerge in a young age but even adults face some difficulties when it comes to pass the false belief task. Surprisingly, even if adults have the ability to infer into mental state of others, thus possess ToM, this ability is not incorporated enough into their spontaneous way of thinking. Even if the false belief task seems easy for adults, they sometimes also fail to pass this task, since in many cases ToM is not part of their routine operations (Keysar, Lin & Barr, 2003).





**Figure 2: Illustrative example of false belief task.** (Baron-Cohen, Leslie, & Frith, 1985)

However, there are some doubts about the false belief task validity. Bloom and German (2000), present two reasons why false belief task should not be a test for ToM. The first reason is that “There is more to passing the false belief task than ToM”. This reason indicates that there are many cases that children will answer that Sally should look for the marble in the right place but without understanding her mental state. The second reason is that “There is more to ToM than passing the false belief task”. This

reason refers to the cases that children may fail the false belief task, but still be able to reason several mental states (Bloom & German, 2000).

There might be other different reasons that children fail the false belief task. What has been noticed during the experiment in Greece is that children may fail the false belief task for several reasons. Some doubts that other people may have are the following:

- Children often believe that other children make fun of them: In some cases, participants mentioned that children like to make fun with each other and that's why Sally should be suspicious that Anne may have changed the ball. Hence, since Sally was aware that Anne likes to make jokes, she should look for the marble in the box.
- Children in that age always like to help the hero of the story: Since children know that the marble is now in box, they think that Sally should look for the marble in the box just because they want the hero (Sally) to find the marble. They will not spend some time to think about the mental state of Sally, and as spontaneous they are, they just say that Sally should look in the box.

Notice: The name of the dolls in our experiment were different and adjustable to Greek names. However, this doesn't affect the result.

- The gender, the age and the race of the experimenter may matters: I would suggest for future investigation that the experimenters should have the same gender, age and race with the participants in order to avoid any effects that those differences may create.

Human's ability to acquire ToM has social function in our daily life. This ability explains not only our behavior, but also the behavior of others. Thus, people use this

ability for two reasons. First to understand actions, and second to predict others' behavior (Keysar, Lin & Barr, 2003). Having ToM means that people are able to recognize that others' behavior is based on their goals, and their perspective of the world is maybe different from them. In order to understand their behavior, we need to put ourselves in the others' shoes, take into consideration their perspective and combine it with the state of the world from our own perspective. Separating and comparing those two perspectives allows us to infer into mental states of others (Frith, Gallagher, & Frith, 2003).

The lack of ToM is considered by many to be a core in autism. The link between autism and ToM came from a research found that children with autism do not have ToM and face difficulties in understanding another person's belief (Baron et al., 1985). People who suffer from autism, schizophrenia, Asperger' syndrome, attention deficit, hyperactivity disorder usually have delay access or no access to ToM.

Sometimes people confuse the meaning of ToM with other phenomena. For instance, they falsely believe that ToM has the same meaning with empathy since both of these meanings require to put yourself in the shoes of others. However, ToM is a "*mental state*" that enables to understand and represent the metal states of others, read their mind and understand their point of view, contrary to empathy which is a "*sensory state*" that helps people understand how other people feel, and comprehend their emotions (Singer, et al., 2004). It is also common that people compare ToM with Machiavellianism. Machiavellianism or tactical deception is a way to manipulate people's behavior for your own profit, by manipulating their beliefs (Frith & Frith, 2005). Hence, people believe that is required for Machiavellians to have ToM. However, there is a clear difference between these two meanings. ToM is the ability

to understand others' beliefs and intentions and not to manipulate them. There is a research actually found that Machiavellianism is unrelated to ToM. In the abovementioned research, we can see that high Machiavellians people are less associated with ToM, however in some cases they seem to be correlated with empathy (Bagozzi, et al., 2013).

### Generosity

Generosity is a character trait that guides people toward giving to others, without having to. The quality of being kind, understanding and not being selfish is something that we all probably wish to have more of. The virtue of being willing to share various valuable resources with others makes people generous. According to Nietzsche, "giving something you possess to others within an exchange economy makes people generous" (Diprose, 2002). Probably the most representative example of generosity is the maternity one. Pregnancy, birthing and breastfeeding are excellent illustrations of generosity, since we can clearly see the sacrifice of women, like the change of the body and the pain during giving birth and breastfeeding, in order to give birth. (Hird, 2007).

Generosity is a virtue that emerges in people in a very young age. Even by around 4 years of age, the majority of children behave altruistically and develop generosity (Benenson, Pascoe & Radmore, 2007; Robbins & Rochat, 2011).

However, generosity has been studied in different economic games, hence researches created different methods in order to measure generosity in humans. All these methods helped many researchers to measure generosity, which has been

related to ToM. However most of them have different outcomes. The most common methods are:

**a) Forced-choice sharing method:**

In the forced-choice sharing method, participants (4-6 years old children) were asked to draw themselves, one of their friends, one of their non-friend classmate and one of a sex-matched unknown child that the experimenter showed with a photograph and attach the drawings to a paper bag. The participants were given a sticker book and the experimenter explained that they are going to play a choosing game with stickers. In case that participants decide to keep the stickers for themselves they can immediately put them in their sticker book. Otherwise, in case they want to share some stickers, they go in the paper bags and they will be given to everyone after the game finish. The experimenter then put a single sticker and a pair of stickers in the table and the forced-choice game begins. The main test was 3x2 design (Sharing partner: friend, non-friend, stranger) x (choice type: prosocial, sharing).

- In the prosocial choice, children should decide between keeping one sticker for themselves immediately or one for themselves and one for the other recipient (friend, non-friend, stranger) at a later time.
- In the sharing choice, children should decide between keeping two stickers for themselves immediately or one for themselves and one for the other recipient (friend, non-friend, stranger) at a later time.

There were 6 trial types to each participant, so all the scenarios can be tested.

The results from the friend recipient showed that children from 4 to 5 years old tend to share even if there is a cost to themselves. In the case of the non-friend, the participants were less likely to share. The stranger from the other hand, was treated more as friends than as non-friends, which means that when there is a little or no cost, children will share even with unknown people.

However, we should take into account that one of the persons that children share the resources is a friend of theirs. In this case, children are more emotional influenced, as people tend to share more with people that they know, and mainly when they are friends. (Moore, 2009)

#### **b) The ultimatum game**

The ultimatum game in the following research was conducted face-to-face without anonymity from 68 pairs of preschoolers, matched by gender, with a mean age 7 years old.

In this game, one of the participants (proposer) gets 10 stickers and make an offer to his peer (responder) regarding how many resources he is willing to share. If the responder accepts the offer, then both participants will take the resources. In the case that the responder rejects the offer, then both participants leave with no resources. Hence, if the proposer decides to keep all the resources for himself, then most probably the responder will reject the offer.

Therefore, the risk of leaving without resources influence the decision of sharing. Takagishi et al. (2010) used this method to investigate the relationship between ToM and fairness-related behavior. The results showed that children with ToM tend to share more resources, which means that they

can put themselves into the shoes of others and understand which offer will be appealing to others, so they can both gain some resources. We can notice in this case that children with ToM are able to recognize the more profitable way of distribution and act within a strategy.

### **c) The dictator game**

Dictator game is the only method compared to abovementioned that does not include social pressure. The recipient is not present and is also unknown by the participant, which means that decision will be less biased and more fair. Therefore, the participant takes 6 stickers and in case that he likes all of them then they belong to him. In case the child does not like some of the stickers, then they are replaced. Then the participant was told about another child that could not participate in the game and get some stickers. After that the experimenter asks the participant if he is willing to share some resources with the other unknown child. In case that he is willing to, then he is asked how many of the resource he wants to share with the recipient. During the decision-making, the experimenter turns around in order to avoid biased based decisions. Dictator game is helpful for exploring generosity, due to the fact that the process and the execution of the experiment are easily controlled (Engel, 2011). Cowell et al. (2015) used this method in their research and contrary to Takagishi et al. (2010), found that having ToM decrease the sharing behavior. These findings are connected to the methods used in these two researches, since in the dictator game participants do not feel social pressure due to the fact that they do not know the recipient, and moreover all the choices are accepted. That means that children reacted in a

more spontaneous way, without having a strategic plan. Even if participants are not willing to share any resources, that will not cost them anything. We should take into consideration that with this method the participants feel freer to decide, which makes the results fairer and more objective compared to the others. This could be a potential reason why the outcomes are different. Children with ToM in all cases have the ability to recognize which strategy they need to follow in order to get the profit that they want to.

In this study the method that is used in order to study the generosity of the children is the dictator game.

### Social environment

All the studies so far used participants that already have acquired specific values, norms, cultures, habits etc. from their social environment, like culture and countries, focused on European and American differences.

Everything started from US and Cowell's et al. (2015) research which was contacted in a large Midwestern city. Participants were of representative socioeconomic status (SES) but primarily from low SES. In this research it was found that children who have ToM tend to share less than the children who do not acquire ToM. After that two master students of Erasmus School of Economics (ESE), Vuylsteke (2015) and Wessels (2015), replicated the same study in the Netherlands and did not find the same correlation between ToM and generosity. In 2016 four other master students of ESE replicated the study in the Netherlands and in Greece, in both low and high SES, in order to add as moderator the different socioeconomic status and environment. De Vries (2016) focused mainly in the home-based involvement and



indeed she found that the background of the child in terms of social influences within a family plays an important role on the sharing behavior of the children. Vaessen (2016) from the other hand focused more on the school based involvement and found that indeed the model of the school-based environment is a significant predictor for generosity. Tzouvara and I (2016) replicated the same study in Greece. In both cases, in the Netherlands and in Greece we did not find a correlation between ToM and generosity.

When we investigate issues that are strongly interconnected with how the personality of a human being is developed, socioeconomic environment is a factor that should be taken into consideration. Many researches in the past have already prove that the income of the family and the environment that children grow up affects their generosity. Adelberg and Doland (1967) tested the sharing behavior in 2 groups of preschool age children. The first group was composed of 10 boys and girls, all white, at a private nursery school, and the other of 9 boys and 7 girls, mostly Negro, at a child welfare center for dependent and neglected children. In this research, the children from the private school shared significantly more than the children from the welfare center (Doland & Adelberg, 1967).

However, when we take into consideration the age, results may be the opposite. There are proofs that concerning the adults, people from lower socioeconomic environment are more generous than people from higher classes (Piff, Kraus, Cote, Cheng, & Keltner, 2010). There are controversial outputs from the past, however, social environment is a factor that should necessary be taken under consideration, since it affects the development and operation of generosity.

## METHODS

### Participants

This study examined children between 4 and 7 years old (N=110, average age= 6.2 years, Standard Deviation= 0.85, and male= 60) in Greece. The children were recruited from 3 different primary schools, and 2 different kindergartens in Thessaloniki and Igoumenitsa.

In order to conduct the experiment, we needed to be licensed by the Ministry of Education of Greece so we could enter the schools. In addition to that, we also submitted letters to the directors of the schools and to the parents of the children participating in the experiment, asking for their permission to participate in the survey, so we can be totally authorized to conduct the experiment. The letters with signatures obtained the approval. These letters are shown in the Appendix.

### Procedure

All children should give their verbal assent that they agree to participate in the experiment. The whole test conducted with ethical guidelines for testing children and was approved by the ERIM and with the written informed consent. The children were tested during the school time, one at a time, outside of their classroom. In the beginning, the children were asked some personal questions (e.g. how old are they, how many siblings do they have and if they are younger or older than of them). They were first tested for ToM with the false-belief task (Baron et al., 1985) and then their generosity was tested through the Dictator Game.

## MEASURES

### Theory of Mind

The ToM evaluation came from the false belief task (Baron et al., 1985), and was performed with 4 dolls, two female and two male according to the gender of the participant, one tennis ball and some baskets and buckets. Children are shown a doll, Tina/George (the doll should have the same gender with the participant), and Tina/George wants to store the tennis ball somewhere and take it later. The option that she\he has is a basket or a bucket. The doll puts the tennis ball in the basket or in the bucket (original hiding place) and leaves the room. Another doll enters the room, Kate/Greg, takes the tennis ball from the original hiding place and moves it in the alternative hiding location. Then Kate/Greg leaves the room as well. Then, Tina/George comes back to the room and the children are asked: "Where Tina/George will first look for the tennis ball? Children who answer the original hiding location pass the test of ToM, and children who answer the alternative hiding location fail the test. To reduce possible biases due to the children's obtained intelligence from other classmates, the researchers changed the original place of the ball (box/bucket) frequently.

### Generosity:

The children get 6 stickers as they helped us with the false-belief task, and are asked if they like all of their stickers. Once the interviewer is sure that children like all the stickers, the children are told that the stickers now belong to them. If not, then the stickers are replaced, until the participants like all of them. However, the children

have the possibility, if they want so, to give some stickers to another child (the same gender with the participant), that could not participate in the game and could not get some stickers. The interviewer emphasizes that neither the child nor the interviewer would know who will receive the stickers. Instead, another interviewer will distribute the stickers to those children who were not participating. The children then get two bowls. One for themselves and one for the other child that cannot participate. Before we ask the children to put the stickers in the balls we need to be sure that the children understood that they are not forced to give one or more stickers and if they want, they can keep all for themselves. Moreover, we ask the children to indicate which bowl is for them and which is for the other child. If they indicate the bowls incorrectly, then the instructions were repeated. The number of the stickers that children give to the other child measures the generosity.

All stickers were purchased outside of the country to reassure that the children had not previously obtained an identical one.

### Socioeconomic Status (SES)

In this case we did not use a specific way to measure the SES of children, like previous researches used the parental education, mainly the maternal one, (Cowell, et al., 2016), since it was not the main factors that we wanted to investigate. However, the children of our sample are from different SES environment, since one of the schools is a private one compared to the others that are public schools. Moreover, the 3 schools in Thessaloniki are located in more high socioeconomic neighborhoods compared to the other two in Igoumentisa that were located in mainly low

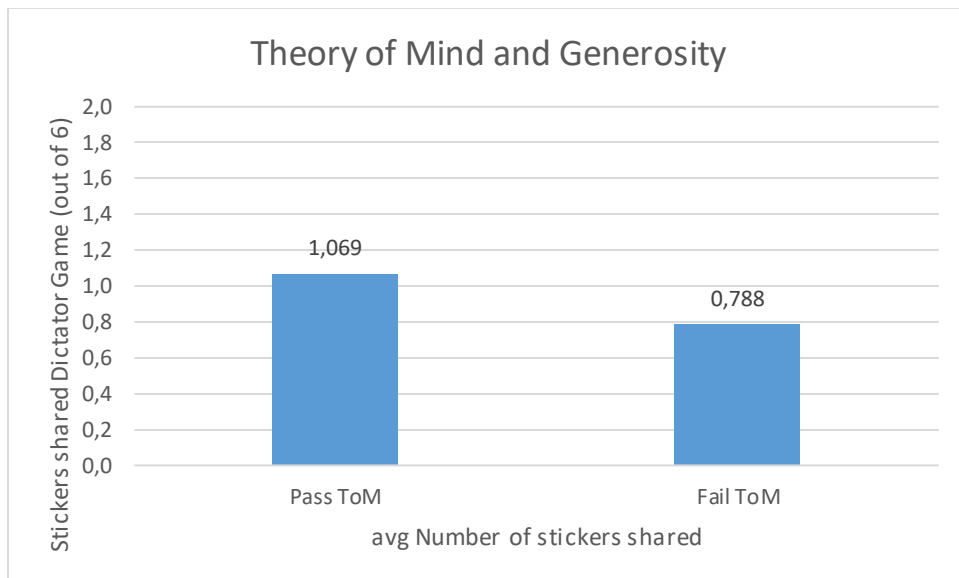
socioeconomic neighborhoods. Hence, we can assume that the children of our sample are from different SES.

### Siblings and position

Before starting the experiment, all children were asked some personal question (e.g. how do they feel today, if they want to play a game with us, how old are they). Then, they were asked if they have siblings, if so how many do they have and what is their age. The number of siblings was measured in numbers and the position that the children have in the family was measured as youngest, middle child, oldest or twin.

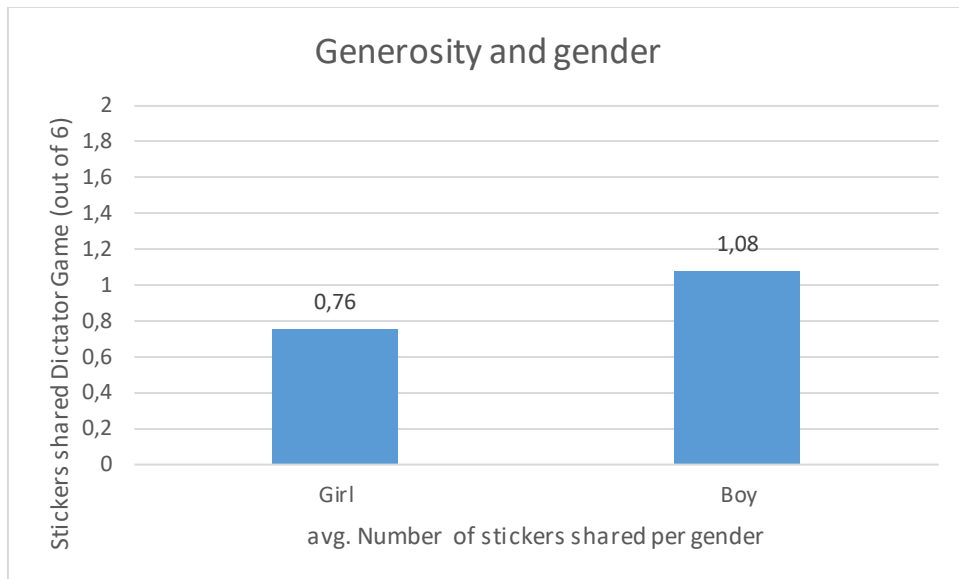
## RESULTS

The average amount of stickers shared per child in the study is 0.94 out of six. An Analysis of Variance (two-way ANOVA) was used in order to measure if there is significant difference in generosity amongst children who passed the ToM test. The dictator game output (the amount of stickers that children kept for themselves) was used as the dependent variable and result of ToM test was conducted as an independent variable. The results were insignificant ( $F(1, 102) = 3.996, p = 0.48$  *n.s.*), proving that children who passed the ToM test do not keep more stickers than the ones that failed. The results are shown in figure 3.

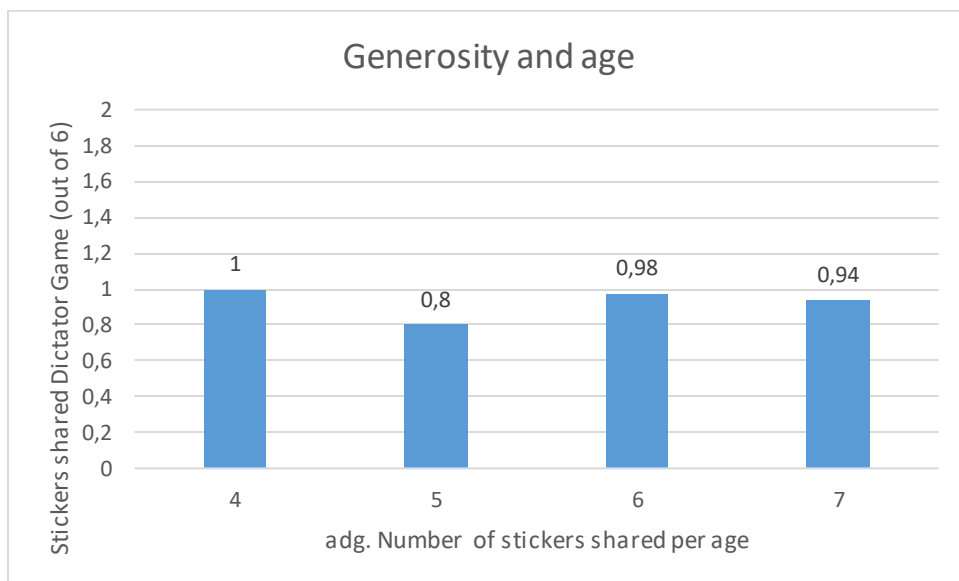


**Figure 3: Dictator Game amount shared influenced by ToM performance**

The Univariate Analysis of Variance test was also used to measure any potential effect that gender and age have on sharing behavior. Generosity was used as the dependent variable. Gender and age were the independent variables. The results proved again that there is no significant effect on generosity caused by the gender ( $F(1, 101) = 0.601, p = 0.44$  *n.s.*) or the age ( $F(3, 102) = 0.421, p = 0.739$  *n.s.*) of children (see figure 4 and 5).



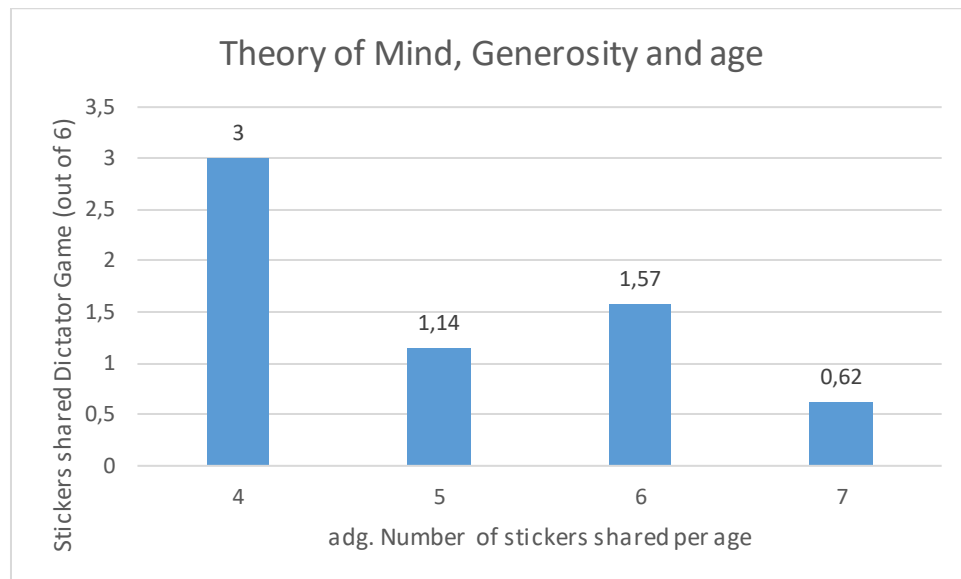
**Figure 4: Dictator game amount shared, influenced by gender**



**Figure 5: Dictator game amount shared, influenced by age**

Last but not least the interaction between ToM and age on generosity of children was added to the model. After adding this variable, the impact of the age of children that possess ToM on generosity was tested. This model found to have a significant impact on generosity ( $F(3, 102) = 4.814, p = 0.004$ ). In other words, this

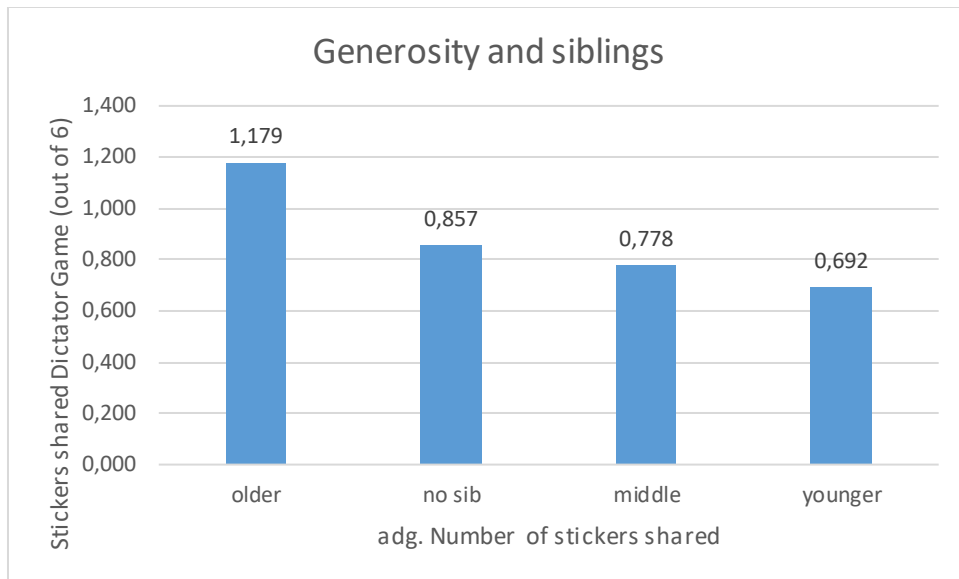
means that the older the children that have ToM are, the less generous they become (see figure 6).



**Figure 6: Dictator game amount shared, influenced by the age of children that hve ToM**

The position that children hold in the family was also tested in order to check the influences that children get from their siblings and if this influence affects their generosity. The results were insignificant ( $F(1, 106) = 1.196, p = 0.277$  *n.s.*). However, with a deeper dive into the data, we can notice that the average of stickers that children shared the most, were the children with older siblings (1.179), and followed by children with no siblings (0.857). The middle children follow with 0.778 and the children with younger siblings are the ones that shared the less stickers (0.692). However, only by coincidence the number of children that have older siblings is exactly the same with the one that have younger. This fact can make them better comparable. On the other hand, middle children and children with no siblings were much fewer (see figure 7).





**Figure 7: Dictator game amount shared, influenced by siblings**

Initially, the primary relation of this research (if the children who passed the ToM test are less generous than the ones who failed) found to be insignificant. Trying to analyze the data in a more detailed way and dive deeper into the data, this research revealed that the ToM and age matter.

Given the statistical analysis, we found that age is a moderator between ToM and generosity. We prove that that the higher the ToM and the age are, the less generous the children become.

For future investigations, I think that it would be better if the sample of children is formed by the same amount of children of each age. In our experiment only few children were 4 and 5 years old and most of them were 6 and 7. Hence, the results may be more valid if the age of the children varies more, especially if age is one of the factors that may has an influence on the relationship between ToM and generosity.

## DISCUSSION

Cowell et al. (2015) supports in his study that children in young age who develop ToM are getting less generous. This study was replicated in the Netherlands and in Greece. However none of these studies found a correlation between ToM and generosity. What we hypothesized is that this relationship can be moderated by other factors like parents, school environment, gender, age, socioeconomic environment, etc. In this dissertation we statistically proved that the higher the age of children who have ToM is, the less generous the children are. This study is based on this assumption. In order to replicate Cowell's et al. (2015) study, we used a sample of children in Greece from both high and low socioeconomic environments, and we replicated the false belief task to test if children have developed ToM, and the dictator game to measure their generosity. The sample consists 110 children from Thessaloniki and Igoumenitsa.

The results of this study proved that there is no significant effect between ToM and generosity in 110 children from 4 to 7 years old. This is something that is not easy to get, since it requires to get permission from schools, parents and minister of education. Children who passed the false belief task did not seem to be more egoistic compared to those who failed. Moreover, this study tested if other factors may affect the generosity of children. Gender, age, the position that children have in the family, if they have siblings or not. However, none of these cases seem to have a strong impact in children's generosity. Those are some of the main differences that are pointed out in this study compared to former ones. In addition to this, this study moves one step forward and integrates new variables in this model and propose new insights for

further investigation. This study statistically proved that the older the children that have developed ToM are, the more egoistic they become, hence the less generous.

It is a general belief that being able to understand the feelings of other people and put yourself into their shoes would make you more empathic with other people. However, what this study reveals, is that even children from a very young age of their lifetime, they realize that the world is not a fairytale and people behave according to their intentions. These intentions may sometimes be good and some other not. Hence, despite the fact that children appear to show fairer attitude to other human beings, when they are capable to understand others intentions (have developed ToM) and as they are getting older, they start to become less generous, more suspicious and think within a strategy. This might be a defense mechanism, which enables children and people in general, to filter others' people behavior and try to think and act within a strategy framework. Apparently this would affect the sharing behavior of children. What we should notice here, is that older children with ToM did not stop sharing resources with other children. They just shared less resources compared to younger children with ToM. This phenomenon reveals that getting older and having ToM enables children to grow their social intelligence, think and act in a way that other people will not take advantage of their initial good intention to behave fairly. In this way they also protect themselves in terms of fall into the trap of some people that want something from them only for their personal gain.

On top, in some cases it could just be that children who have ToM are more selfish than the other children, and therefore they take advantage of each situation and behave accordingly, which means in our case that they keep most of the resources for themselves since they do not face any risks. That is why with Dictator Game we

can measure the pure generosity of children. Since they are not forced to share anything, and the sharing person is someone unknown, which means that they are not emotionally affected, they take the decision based on their instinct and what feels better for them.

For further investigation, I think that one important variable to add in this model is the parents' behavior. In such a young age, most of the incentives that children have come from their parents. Hence I think that a similar test, to measure the generosity of parents would be really helpful to have a clearer view on children's generosity. Moreover, it will be very interesting to investigate what makes children develop ToM. From my experience, when we replicated the experiment, I noticed that children who passed the false belief task, they seemed to be more communicative and interactive compared to those that failed the test. For future investigations I would also suggest to check if the children that acquire ToM have some similarities in their personalities and if this is correlated to the fact that they possess ToM.

## PRACTICAL IMPLICATIONS

Most of the researches including mine discuss mainly the relationship between ToM and generosity, taking into account different variables each time in order to find out what influences this relationship. It would be very interesting though, to have a look on the impact of ToM and generosity in the business world. We have already seen that having ToM affects generosity. The relationship maybe is inconsistent, however, it would be very interesting to find out the advantages of having ToM and being generous in the world of business.

### Business implications: Theory of mind as marketing tool for salespeople and branding.

Being able to understand the thoughts and feelings of other people can definitely drive you to the sales success route. There are some researchers that tried to measure salespersons' ability to better interact with customers, according to their ToM level (Dietvorst et al., 2009). One of the conclusions of this research is that salespeople with higher ToM are more adaptive in selling situations compared to those with lower ToM scores. With a deeper view, we can easily recognize that salespeople with higher ToM scores can better understand what a customer wants, thinks about a product or service, and adapt himself into the customer's needs.

Having the ability to understand others' thoughts, can work as a tool to improve the customer relationship management (CRM) of the company. Nowadays, mass production keeps a distance between the sellers and the buyers. The best way to build a real and loyal relationship with customers is to understand their habits, their needs, their problems and put yourself into their shoes. Hence, having ToM, can also

contribute in communicating the right messages and contents to the customers. Especially nowadays, customers have access to every kind of information they want via Internet, find the right content in your website or in your advertisement campaign requires the ability to put yourself into the others (customers) shoes (Chen & Popovich, 2003).

From marketing perspective, ToM is an essential tool to define your target group. No matter if we take as an example a multinational company or a small restaurant defining the target group is one of the first steps that marketers should think about (Jotler & Levy, 1969). Many people think that marketing is about stimulating customers. However, all companies and organizations should be able to clearly define their target group. After definition, it comes to understanding. Target group usually share the same goals. Marketers should be able to understand their customers' needs and here ToM plays a very important role. If you know who your customer is and what he wants, then you can adjust your marketing strategy accordingly.

From branding perspective, ToM is a significant predictor of a brand representation ability. ToM is strongly connected with the brand knowledge of 3 to 5 years old children. When it comes to consider children as potential customers, ToM plays an important role since it is linked with the children's brand associations. This inquires that marketers should take into account and understand the associations of their customers and develop their cognitive abilities in order to improve their branding building strategy (McAlister & Cornwell, 2010).

## Business implications: management and employees

ToM is an essential virtue amongst employees and definitely between managers and employees. Companies are like small societies, and the social skills that people develop in their young ages will help them or not to better collaborate with other people. *"Social behavior can be broken down into cooperation and competition"* (Frye & Moore, 2014). In order to develop a cooperative social behavior, and find the way to better collaborate with your colleagues, it is useful to be able to put yourself into their shoes. Therefore, having ToM makes you a better colleague and better team player in general.

Talking about companies and the best way of working, it should be mentioned that ToM is also crucial from the management perspective. Eisenhardt (1989) tried to explain the relationship between manager and employee, with the principal-agent mechanism. With a deeper view, that means that when a manager (principal) is able to understand his employer (agent), which means that the manager can apply his ToM, then he can clearly identify the motivations of the employee and reward him accordingly. However, this skill is not useful only when it comes to reward someone or not. Being a manager and being able to read your employees make you a better coordinator of the team (Eisenhardt, 1989). Moreover, one very important implication of managers who have ToM is not only that they can better accept and deal with others' actions and efforts, but also guide their teams to value maximization. (Foss & Stea, 2014)

## ACKNOWLEDGMENTS

I would like to thank my supervisor Willem Verbeke for being very helpful to me, and Aikaterini Tzouvara for the great collaboration. I also thank Olga Kegkou who helped us finding the schools in Greece that we collected our data and contributed in taking the permission of the Education Ministry. A big thanks also to the directors, teachers, parents and the children that participated in our experiment. I am also grateful to Georgios Kalantzis for his support in overcoming numerous obstacles I have been through during my research.

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## APPENDIX

### Exhibit 1 – Education Ministry consent



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Ημερομηνία: 15-04-2016

### **Αίτηση για Άδεια Εισόδου για την πραγματοποίηση μελέτης σε Σχολεία Πρωτοβάθμιας Εκπαίδευσης στην Ελλάδα**

Αγαπητέ Κύριε, Κυρία

Ονομάζομαι Κέγκου Χριστίνα και μαζί με την Τζουβάρα Αικατερίνη συμμετέχουμε σε μια έρευνα στο πλαίσιο της εκπόνησης διπλωματικής εργασίας του μεταπτυχιακού προγράμματος Erasmus School of Economics, στο Erasmus University of Rotterdam.

Σκοπός της έρευνας αυτής είναι η παρατήρηση της συμπεριφοράς και των αντιδράσεων των μαθητών ηλικίας 4-7 ετών, κατά τη διάρκεια της αφήγησης μιας ιστορίας, για να διερευνηθεί και μετρηθεί το επίπεδο της ενσυναίσθησης που τα διακρίνει. Ο Εκπαιδευτικός της τάξης θα αφηγηθεί στους μαθητές την ιστορία αυτή, κατόπιν επαφής και συνεργασίας μαζί μας. Η δράση αυτή θα διαρκέσει μία διδακτική ώρα, με τη σύμφωνη γνώμη του εκπαιδευτικού της τάξης και του Δ/ντη του Σχολείου.

Η έρευνα αυτή διεξάγεται ήδη στις Ηνωμένες Πολιτείες όπως και στην Ολλανδία. Τα αποτελέσματα αυτής της έρευνας θα συμβάλουν σημαντικά στην περαιτέρω μελέτη του καθηγητή W. Verbeke και της επιστημονικής κοινότητας αναφορικά με το θέμα Theory of Mind and Empathy

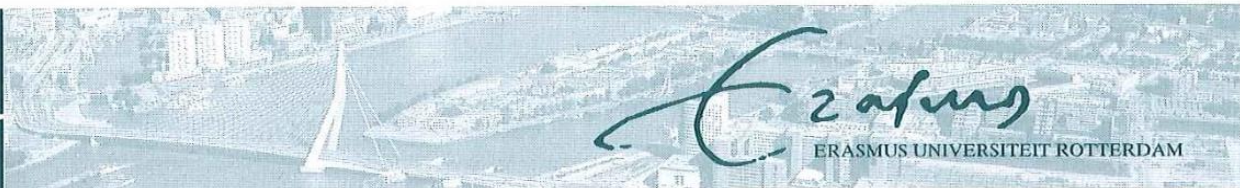
Η μελέτη αυτή έχει εγκριθεί δεοντολογικά από τον Πανεπιστήμιο Erasmus of Rotterdam με αριθμό πρωτοκόλλου 2016/03/ 18-05483wne. Η έρευνα αυτή διεξάγεται ήδη στις Ηνωμένες Πολιτείες όπως και στην Ολλανδία. Τα αποτελέσματα αυτής της έρευνας θα συμβάλουν σημαντικά στην περαιτέρω μελέτη του καθηγητή W. Verbeke και της επιστημονικής κοινότητας αναφορικά με το θέμα Theory of Mind and Empathy.

Θα θέλαμε να σας παρακαλέσουμε για άμεση έγκριση της άδειας εισόδου, καθώς το Πανεπιστήμιο Erasmus of Rotterdam έχει ήδη καταβάλλει το απαραίτητο χρηματικό ποσό για την μετακίνηση μας από την Ολλανδία και διαμονή μας στην Ελλάδα από 9 μέχρι 20 Μαΐου. Δυστυχώς, δεν είχαμε ενημερωθεί νωρίτερα για την διαδικασία έγκρισης άδειας εισόδου, με αποτέλεσμα να μην υπάρχουν περαιτέρω χρονικά περιθώρια μέχρι τη λήξη του τρέχοντος σχολικού έτους.

Θα θέλαμε να διευκρινίσουμε ότι έχουμε έρθει ήδη σε επαφή με Σχολεία Πρωτοβάθμιας Εκπαίδευσης του Νομού Ιωαννίνων και Θεσπρωτίας και έχουμε την σύμφωνη γνώμη των Δ/ντων και Εκπαιδευτικών.

Με εκτίμηση  
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## Exhibition 2: School and parental consent



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Date  
Rotterdam, April 1<sup>st</sup> 2016

Subject

### Informed Consent

Dear Miss, Sir,

My student Christina Kegkou at the Erasmus School of Economics (Rotterdam, The Netherlands) is doing a study about the way children have compassion with other children. Christina Kegkou is doing this study using a well-known economic game involving the usage of toys. During this game they will be observed by Christina Kegkou and she will also ask some questions how they think and feel about other children. This study takes place during the months of May and June, 2016.

This study already has been performed both in the USA and in Holland. Children find this game exciting and pleasant and they also love to answer the questions about how people think.

As director of the school ..... we ask you politely if your students can participate in this study as this study helps us at the University to better understand how children can cooperate with each other and enjoy each other.

This study has been ethically approved at the Erasmus University under the label: 2016/03/18-05483wve.

We are very thankful for your collaboration.

Sincerely,  
Professor Willem Verbeke Ph.D.

I hereby agree that my school.....will participate in the study which Christina Kegkou will do at the school.

Name

Signature and date

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Date  
Rotterdam, April 1<sup>st</sup> 2016

Subject  
**Informed Consent**

Dear Miss, Sir,

My student Christina Kegkou at the Erasmus School of Economics (Rotterdam, The Netherlands) is doing a study about the way children have compassion with other children. Christina Kegkou is doing this study using a well-known economic game using toys. During the game your child will be observed by Christina Kegkou and she will also ask some questions how your child thinks about other people. This study takes place during the months of May and June, 2016.

This study already has been performed both in the USA and in Holland. Children find this game exciting and pleasant and they also love to answer the questions about how people think.

As parent, we ask you politely if your child can participate in this study as this study helps us at the University to better understand how children can cooperate with each other and enjoy each other.

This study has been ethically approved at the Erasmus University under the label: 2016/03/18-05483wve.

We are very thankful for your collaboration.

Sincerely,  
Professor Willem Verbeke Ph.D.

I hereby agree that my child.....will participate in the study which Christina Kegkou will do at the school.

Name

Signature and date