

The Relationship between Theory of Mind and Generosity in Pre-school Age Children (4-6 years).

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ABSTRACT

The ability to read and understand someone's intentions based on behavior is called Theory of Mind. Former researches have already tried to investigate and explain the relationship between having a Theory of Mind and generosity. This study found that children who are able to read and understand someone else's intentions share on average less. On top, the school-based involvement was investigated and the model shows that the preschool itself plays a role in the sharing behavior of the child. Several possible explanations will be discussed based on the findings and suggestions for further research will be made.

Keywords: Theory of Mind, generosity, preschool



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PREFACE

This study is based on the research ‘The Curious Relationship between Theory of Mind and Sharing in Preschool Age Children’, the research of Cowell, Samek, List and Decety in 2015, This study extends the research by adding a model based on the social environment of the child. This model is divided into the school-based environment and the home-based environment.

Two master students, Michelle de Vries and Annique Vaessen, from the Erasmus School of Economics – Marketing Department, collected the data for this study. De Vries (2016) investigates the home environmental factors, whereas this study focuses on the school-based involvement.

No content is directly copied from the research of Cowell et al. (2015) or any other research. The data was analyzed by using SPSS, in order to perform the study.

Great thankfulness goes out to supervisor professor W. Verbeke for his help, the six primary schools, the teachers, the parents and all the children who participated.

INTRODUCTION

Being human is already a saying in itself, which means that we act upon emotions and relates to the fact that we are an extremely social species. As a human you can think for yourself and decide for yourself, consciously and unconsciously, but it is always directly or indirectly related to social interactions (Becker, 1974). According to Bowlby's Attachment theory (1969/1982, 1973, 1980) humans are affected by social interactions that affects one's whole life in terms of behavior and relational accomplishments. Humans act pro-socially and are likely to perform altruistically, by sharing and benefitting others even if it at times may hurt themselves (Fehr & Fischbacher, 2003; Fehr, Bernhard & Rockenbach, 2008; Li, Li & Decety, 2013). Even more, the absence of social support and interactions can lead to major illnesses (House, Landis, & Umberson, 1988). Furthermore, individuals develop certain attachment styles for social groups (Smith, Murpy & Coats, 1999), which triggers emotional reactions to group members and to group identification. Moreover, these attachment styles towards groups affect learning processes of emotional, social and cognitive skills (Forsyth, 1990).

Social skills and different kinds of personalities are starting to develop very early in life. Already 1 and 2 year old infants pick up senses of fairness and altruistic behavior (Schmidt & Sommerville, 2011; Sloane, Baillargeon & Premack, 2009). A former research already discussed the incentive of social reinforcement regarding a child's sharing behavior (Doland & Adelberg, 1967). Multiple studies show that children's ethical attitude changes over time as they grow older. Children grow into becoming more sensitive to inequality aversion and therefore starting to behave less selfishly. According to these studies, as children grow older, their sharing behavior and therefore its generosity improves (Robbins

& Rochat, 2011; Shaw, Montinari, Piovesan, Olson, Gino & Norton, 2014; Fehr, Bernhard & Rockenbach, 2008). The reason generosity is used as the dependent variable is because it embodies social behavior, which gets influenced by several factors and it changes with age (Cowell, Lee, Malcolm-Smith, Selcuk, Zhou & Decety, 2016). Still the key question remains: what is it exactly that triggers the increase in generosity?

Over the years multiple researches have been studying general cognitive capabilities including executive functioning (EF), working memory, inhibitory control and sharing among young infants, but no significant influence has been found (Takagishi, Kameshima, Schug, Koizumi & Yamagishi, 2010; Aguilar-Pardo, Martinez-Arias & Colmenares, 2013; Carlson, Zelazo & Faja, 2013; Smith, Blake & Harris, 2013; Cowell, Samek & Decety, 2015; Vuylsteke & Wessels, 2015; Cowell, Lee, Malcolm-Smith, Selcuk, Zhou & Decety, 2016). Only, amongst these studies, four of them have found interesting outcomes regarding Theory of Mind (ToM) and generosity among young children (Takagishi, Kameshima, Schug, Koizumi & Yamagishi, 2010; Cowell, Samek & Decety, 2015; Vuylsteke & Wessels, 2015; Cowell, Lee, Malcolm-Smith, Selcuk, Zhou & Decety, 2016).

Takagishi et al. found in 2010 a worth knowing outcome using a bargaining game for preschoolers. The outcome shows a significant relationship between Theory of Mind and sharing behavior. It says that the children who have Theory of Mind are willing to offer more means than children who do not have Theory of Mind. This suggests that when a child has cognitive capabilities, this child is willing to offer more to another individual. So it is concluded that while bargaining, the perspective of another person is valuable for conjecturing what type of offer that other person will accept.

Another study also investigated the relationship between Theory of Mind and sharing behavior in preschool age children (Cowell, Samek & Decety, 2015). This research found a

relationship between Theory of Mind, measured by false-belief understanding (false-locations tasks), and sharing, measured by a dictator game (instead of the bargaining game). Surprisingly this study showed some opposite results compared to the research of Takagishi et al. (2010). The research, conducted in a big Midwestern city of low socioeconomic status discovered that children who did pass the Theory of Mind task, share less on average than children who did not pass the task (Cowell, Samek & Decety, 2015). This contradicting outcome implies that children with cognitive abilities, so children who can read another person's intentions, are actually willing to share less instead of more resources, which is curious. That makes it why this research is called 'The curious relationship between Theory of Mind and sharing'.

The same study also has been conducted in the Netherlands last year, but now amongst two primary schools located in a high socioeconomic areas (Vuylsteke & Wessels, 2015). Only, their results show that there is no significant effect between Theory of Mind and generosity. An appropriate suggestion made by Vuylsteke & Wessels (2015) was that, considering their research compared to the research of Cowell et al. (2015), further research needs to be done that includes primary schools of both high and low socioeconomic areas. These studies taken together incentivise this research to investigate whether a child's socioeconomic area might have a significant effect on its generosity.

The influence of welfare on generosity was already investigated by Doland & Adelberg (1967). This research found that sharing behavior of a child can be influenced by the incentive of social reinforcement (social (non-/verbal interaction). This study differentiated sharing behavior differences for 'poor' children (from a child welfare center for depend and neglected children) and 'wealthy' children (from a private nursery school). Though, they explained sharing behavior only for economic differences in terms of social reinforcement, instead of differences in socioeconomic areas or other external influences.

Additionally, a study examined the underlying cognitive, emotional, and socioeconomic factors that could influence changes in generosity, among different cultures, around the world in early and middle childhood (Cowell, Lee, Malcolm-Smith, Selcuk, Zhou & Decety, 2016). It shows that both social environment and intrinsic factors are important to understand the development of generosity. By social environment mostly culture was investigated, since it encompasses many shared habits, norms and values (Triandis & Suh, Cultural influences on personality, 2002). However, there are many more factors to culture, as for instance in-group identity (Triandis, 2001), and the size of the economy (Henrich, et al., 2005). Personal dissimilarities in developing social cognition and executive function have consequences for different individual aspects, such as academic success, social competence and overall socioeconomic status (Blair & Razza, 2007; Moffitt, Arseneault, Belsky, Dickson, Hancox, Harrington, Houts, Poulton, Roberts, Ross, Sears, Thomson & Caspi, 2011). The findings of Cowel et all. (2016) encouraged investigating additional variables in terms of a child's social environment.

All taken together shows that obviously generosity amongst children develops over time. An earlier study, done by Doland & Adelberg (1967) already found that sharing behavior of a child can be influenced by the incentive of social reinforcement. Also, according to Forsyth (1990), one's group, in other words one's social environment, can have a significant influence on a child's behavior. Moreover, there is evidence that different factors, both intrinsic, namely Theory of Mind (Cowell, Samek & Decety, 2015) and extrinsic factors such as culture (Cowell, Lee, Malcolm-Smith, Selcuk, Zhou & Decety, 2016), might influence a child's generosity.

The goal of this study is to investigate the (curious) relationship between Theory of Mind and generosity among preschool children in the Netherlands, focussing on the social

environment of a child. This research will be executed at several different primary schools in both high and low socioeconomic areas in the Netherlands, driven by the earlier findings of Cowel et al. (2015), Vuylsteke & Wessels (2015), and Cowel et al. (2016).

To define and delimit the child's social environment, this broad concept has been divided into two separate studies. One study focusses on the 'Home-Based environment', by which is meant a child's home situation (de Vries, 2016), and the other study focusses on the 'School-Based environment', namely the school and the neighborhood of the child (Fantuzzo, McWayne & Perry, 2004). This paper will focus on the School-Based environment of the child. In order to test for the School-Based environment the average income of the neighborhood will be taken into account (Henrich, Boyd, Bowles, Camerer, Fehr, Gintis, McElreath, Alvard, Barr, Ensminger, Henrich, Hill, Gil-White, Gurven, Marlowe, Patton & Tracer, 2005; Benenson, Pascoe & Radmore, 2007) as well as the primary school itself (Doland & Adelberg, 1967; Blair & Razza, 2007; Moffit et al., 2011; Cowell, Lee, Malcolm-Smith, Selcuk, Zhou & Decety, 2016).

The first comparison that will be made directly with the hypothesis that cognitive capacity results either into 1) an increase in sharing behavior with an unknown peer, or 2) a decrease in sharing behavior with an unknown peer. The expected outcome will be that a child with cognitive abilities will share on average more with an unknown peer. Further, the neighborhoods of the schools have been investigated for its average income and therefore a second comparison will be made by directly comparing the above mentioned hypothesis for the two groups 1) high income, and 2) low income. Expected is, regarding the former studies, that income will have a significant influence on the relationship between Theory of Mind and generosity. Regarding a child's social environment in terms of School-Based environment, a model will be created to test for the third hypothesis. The third hypothesis will test for the following variables, namely children's Theory of Mind, average area income

and for the children's school, whether sharing behavior differs significantly among Theory of Mind, income and school.

This paper will start by describing the relevant theories for this research including Theory of Mind, sharing behavior and social environment, which will serve as the theoretical framework. The second part of this paper represents the methods followed by the measures, used for this research. The third part will discuss the results of the study and the conclusion. The final part of the paper contains the discussion and practical implications.

THEORETICAL FRAMEWORK

Theory of Mind

Theory of Mind is a cognitive ability, which plays an important role in explaining social intelligence. It can be shortly explained by the ability to put oneself in someone else's shoes. The studies by Goldman (2012) and Sodian & Kristen (2016) describe Theory of Mind as the cognitive ability to attribute mental states to yourself and others. Frith & Frith (2005) give a more extensive explanation by explaining Theory of Mind as the ability to see that people behave on the basis of its mind: based on its desires, its knowledge and its beliefs. 'Having Theory of Mind' means that you understand and take into account the fact that people behave on the basis of its mind. To fully understand what behavior on the basis of its mind means, namely behavior based on 1) its desires, 2) its knowledge and its beliefs, will be explained here in more detail.

1) Understanding a person's behavior based on its desires:

Understanding a person's desires means that you see the fact that someone is acting from a certain position or situation. Understanding another's personal situation means you are able *to read a person's intentions and desires* because of its position or situation.

2) Understanding a person's behavior based on its knowledge and its beliefs:

Understanding a person's behavior based on its knowledge and beliefs means that you see there is a difference between reality and belief: the *so-called false belief understanding*. So a person acts or reacts upon the facts he or she knows, about something she therefore believes, which does not necessarily has to be the actual truth.

Hence, when defining a person's behavior while 'having Theory of Mind', you know it is not about reality but about the person's mind, namely its desires, its knowledge and its beliefs (Frith & Frith, 2005).

However, the question may rise what the difference is between Theory of Mind and empathy, since empathy also holds a brief explanation by the ability to put you in the shoes of someone else. The distinction between the two can be found in the different states of understanding someone. Theory of Mind is the cognitive capacity to represent mental states, empathy on the contrary represents sensory/emotional states (Singer, Seymour, O'Doherty, Kaube, Dolan & Frith, 2004; Bagozzi, Verbeke, Dietvorst, Belschak, van den Berg & Rietdijk, 2013). Even more, according to Dvash and Shamay-Tsoory (2014), empathy is a central theme, a broader concept where Theory of Mind is only part of. The distinction made by Dvash and Shamay-Tsoory (2014) shows two possible empathy systems: namely a cognitive empathy system and an emotional empathy system. Accordingly, cognitive empathy responses typically involve Theory of Mind.

Simply said, Theory of Mind is the ability to understand someone's intentions and know what another person might think, whereas empathy is the ability to understand someone's situation and know what another person might feel.

Here follows an example to explain Theory of Mind, applied on the movie the Lion King:

Would Simba have met Timon and Pumbaa if he already had Theory of Mind?

Uncle Scar *wanted* to become king and therefore made up a sly plan to murder Mufasa without looking guilty. Simba is still very young and therefore only sees his dead father and believes the story of Scar: he *falsely believes* that there is only one truth, namely that he is to blame for the death of his father.

So: if Simba already had a Theory of Mind when this happened, he might have *understood the (bad) intentions* of Scar and therefore would have questioned Scar's story about the actual cause of Mufasa's death. Then Simba never would have fled into exile and might have never met Timon and Pumbaa.

Cognitive abilities develop over time (Casey, Tottenham, Liston & Durston, 2005) and therefore also Theory of Mind. In fact, rather radical differences exist between the Theory of Mind of younger children compared to the Theory of Mind of older children and adults (Fodor, 1992) and even between adolescents and adults significant differences in the development of Theory of Mind exist (Leipold, Vetter, Dittrich, Lehmann-Waffenschmidt & Kliegel, 2013). Younger children either fail in understanding false belief (beliefs that might misrepresent the world) or do not understand the concept of belief at all. They assume that everyone else shares their knowledge about the truth. By the age of 6, children have developed adult-like Theory of Mind (Wimmer & Perner, 1983; Keysar, Lin & Barr, 2003). Therefore, the sample for this study, which consists of children between the age of 4 and 6, is unique, since not all of these children have developed Theory of Mind yet. This makes preschoolers the only group of participants that can be used for testing sharing behavior considering the presence or absence of Theory of Mind.

Generosity

Generosity is used to measure a person's pro-social behavior. Pro-social behavior is shown by selflessness among others, for example by sharing and benefiting other people (Willer, Feinberg, Flynn & Simpson, 2011). Many studies have highlighted underlying altruistic motivations or self-interest, when explaining generosity (e.g., Olson, 1965; Piliavin & Charng, 1990). Studies confirmed that generosity is positively linked to a variety of social benefits, such as influence, cooperation and trust (Andreoni & Petrie, 2004; Hardy & van

Vugt, 2006; Simpson & Willer, 2008), and is also affected by the presence of other individuals (Miller & Ratner, 1998). Therefore people get at some point suspicious when a person is being generous. However, Willer et al. (2011) found that, considering a person's sincere or strategic reasons for being generous, people who are the most generous are still the one's with less desire for status. Even though individuals until today hold various reasons for behaving prosocial, still most of them behave generous for sincerely altruistic motivations (Piliavin & Charng, 1991; Willer, Feinberg, Flynn & Simpson, 2011).

Different kinds of studies used different kinds of methods to measure distributive justice among children. The most common methods are forced-choice sharing with a known other, bargaining games/ultimatum games and dictator games.

Forced-choice sharing was used in the study by Fehr, Bernhard & Rockenbach (2008). This method gives only the choice whether to share or not with a known other. The children get two options, namely to keep all the resources to themselves or to share with someone else, regardless of the amount they would share (Fehr, Bernhard & Rockenbach, 2008).

The bargaining game also measures one's sharing behavior with a known 'other'. This game was used by Takagishi (2010) and asks the question whether they are willing to make an offer including deciding how many rewards they are willing to share with others and how many they want to keep for themselves. The catch here is that the person that they are going to share their resources with, gets the option to accept or reject the offer that has been made, and if that is the case then both children get nothing (Takagishi, Kameshima, Schug, Koizumi & Yamagishi, 2010). A critical note that can be made here is that a bargaining game doesn't precisely measure sharing behaviors in children without social pressure. This is a very relevant note considering Moore's findings (2009) that stated that

children's sharing behaviour differs in case of friends, compared to no friends and strangers (Moore, 2009).

The dictator game is the approach that will be used for this study. In this case the word 'game' might be misleading since it is an individual decision that has to be made. In contrast to the other two approaches, the dictator game measures someone's sharing behavior concerning low social pressure, because they are asked to share with an unknown individual (Cowell, Samek & Decety, 2015; Vuylsteke & Wessels, 2015; Cowell, Lee, Malcolm-Smith, Selcuk, Zhou & Decety, 2016). People tend to behave differently regarding the presence or absence of another individual (Miller & Ratner, 1998). This approach provides the participant with a number of resources and then asks two questions: 1) whether the participant would like to share or not, and 2) in case of sharing, the amount of resources the participant would like to share. Dictator Games can be tightly controlled and easily executed, and are therefore very useful for studies investigating social behavior (Engel, 2011).

Using the dictator game for this study to measure generosity compared to the other two methods could make a big difference, concerning the outcome. The dictator game changes the situation for the children which might explain the curious behavior of the participants before in the study of Cowell et al. (2015). The situation changes in the sense that now children who have Theory of Mind, could understand the situation that there are no consequences for not sharing because of the unknown other person, and therefore they might have shared less (Cowell, Samek & Decety, 2015).

Social Environment

People are social creatures, which are influenced by its environment (Doland & Adelberg, 1967; Becker, 1974; Triandis & Suh, 2002; Fehr & Fischbacher, 2003). Regarding the social environment, former studies found contradicting outcomes concerning generosity

of children in low SES families, compared to children in high SES families (Benenson et al., 2007; Piff et al., 2010). These contradicting outcomes suggest that various environmental factors have various ways of influencing a person's behaviour (Blair & Razza, 2007; Moffit et al., 2011). Driven by former studies that made distinctions between a person's private area and a person's broader environment, this research will make the distinction between the Home-based environment and the School-based environment (McCulloch & Joshi, 2001; Fantuzzo, McWayne & Perry, 2004). This distinction is made in order to investigate influences of children's socializing agents from inside and outside the child's family (Shields, Dickstein, Seifer, Giusti, Magee & Spritz, 2001). As **figure 1** shows, this study combined with the research of de Vries (2016) will investigate social-environmental factors that could influence the child's behaviour. This study will focus on the School-based environment of the child.

The School-based environment will be investigated by two variables, namely School and Family Income per Neighborhood. In preschool, from the age of 3 to 5 years old, children start to develop several important emotional and cognitive competencies, which makes the (pre)school itself an important influencer (Wimmer & Perner, 1983; Dunn & Brown, 1993; Denham, 1998; Harbaugh, Krause, Liday & Vesterlund, 2003; Keysar, Lin & Barr, 2003). In fact, the likelihood of having children who show both positive emotions in school and without behavioural issues increases, when they evolve a secure attachment to the teacher (DeMulder, Denham, Schmidt & Mitchell, 2000; Shields, Dickstein, Seifer, Giusti, Magee & Spritz, 2001). Shield et al. (2001) state that a secure attached relationship is highly influential for developing regulatory skills in preschool age children. However, it seems that for the majority of the preschools it is tough to define an appropriate approach, not for the children with certain issues, but rather for the children without behavioral or emotional issues (Shield et al., 2001). This research examines whether school is a significant influencer

when it comes to a child's sharing behavior. Family Income per Neighborhood is included into the model based on earlier findings by Vuylsteke and Wessels (2015) and Cowell et al. (2015). This variable investigates whether a high or low SES area has a direct significant influence on a child's generosity.

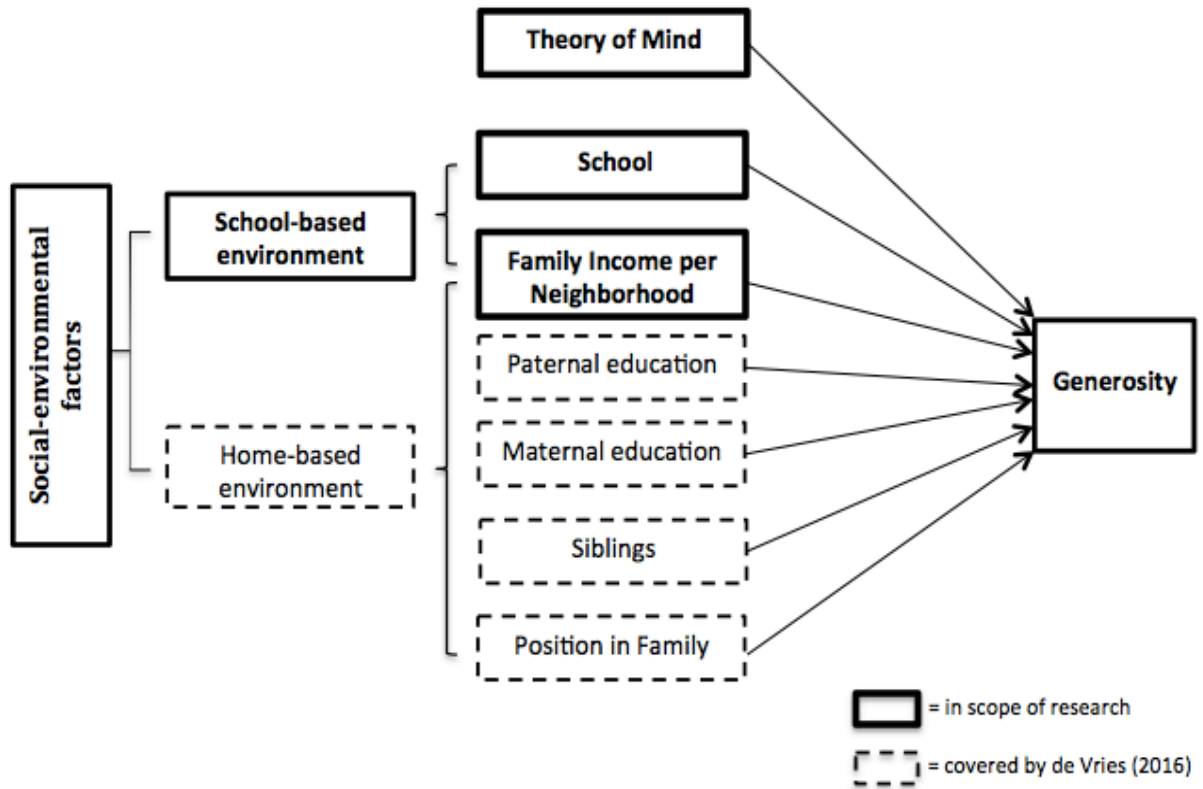


Figure 1 Visual representation of the regression model of children's generosity in the Netherlands, taking into account the social-environment of the child.

METHODS

Participants

This research examined children between the age of 4 and 6 years old. These children were recruited from several primary schools among different areas in in the Netherlands. Over fifty schools in the Netherlands have been contacted in order to build the sample, both low and high socioeconomic areas. Since most of the schools already participated in some kind of research or had a policy of not participating at all, eventually 6 out of more than fifty schools cooperated in this research. The sample is constructed as follows:

- Vuylsteke and Wessels gathered a part of this sample in 2015. These children were recruited in Rotterdam, north/west of the Netherlands (N=109, average age=59.2 months, St. Deviation=1.65, n=56 male). This sample was gathered in 2 primary schools in high socioeconomic areas.
- The other part of the sample consists of children recruited in Heerlen in 2016, south/east of the Netherlands (N=150, average age=58.56 months, St. Deviation=8.33, n=74 male). This sample is gathered among 6 primary schools in both high and low socioeconomic areas.

The total sample consists of 4 schools in higher socioeconomic areas and 4 schools in lower socioeconomic areas in the Netherlands (N=259, average age=58.84 months, St. Deviation=8.86, n=130 male). All samples were recruited and tested by graduate students.

Table 1 shows more detailed information about the neighborhoods of the primary schools.

School	Neighborhood	Income				Origin		
		household low income	household high income	below or around social minimum	income per habitant	income per income recipient	western immigrants	non-western immigrants
School A	Rennemig-Beersdal	50,0%	8,0%	14,0%	18000,00	24800,00	21,0%	7,0%
	Average	50,0%	8,0%	14,0%	18000,00	24800,00	21,0%	7,0%
School B	Schandelen-Grasbroek	60,0%	6,0%	18,0%	18800,00	24300,00	20,0%	14,0%
	Average	60,0%	6,0%	18,0%	18800,00	24300,00	20,0%	14,0%
School C	Meezenbroek-Schaesbergerveld	61,0%	7,0%	19,0%	17500,00	23400,00	20,0%	13,0%
	Schandelen-Grasbroek	60,0%	6,0%	18,0%	18800,00	24300,00	20,0%	14,0%
Average	60,5%	6,5%	18,5%	18150,00	23850,00	20,0%	13,5%	
School D	Meezenbroek-Schaesbergerveld	61,0%	7,0%	19,0%	17500,00	23400,00	20,0%	13,0%
	Schandelen-Grasbroek	60,0%	6,0%	18,0%	18800,00	24300,00	20,0%	14,0%
Average	60,5%	6,5%	18,5%	18150,00	23850,00	20,0%	13,5%	
School E	Welten-Benzenrade	32,0%	23,0%	6,0%	26600,00	34400,00	16,0%	3,0%
	Verspreide Huizen Voerendaal	29,0%	30,0%	5,0%	24400,00	31500,00	8,0%	1,0%
Average	30,5%	26,5%	5,5%	25500,00	32950,00	12,0%	2,0%	
School F	Caumerveld-Douve Weien	42,0%	20,0%	7,0%	28600,00	35700,00	16,0%	3,0%
	Heerlerbaan-Schil	33,0%	22,0%	7,0%	23600,00	33000,00	15,0%	7,0%
Average	37,5%	21,0%	7,0%	26100,00	34350,00	15,5%	5,0%	
School G	Prins Alexander	44,0%	20,0%	12,0%	23700,00	32400,00	10,0%	22,0%
	Zevenhuizen	29,0%	28,0%	6,0%	23700,00	32000,00	6,0%	4,0%
Nieuwerkerk a/d IJssel	29,0%	32,0%	6,0%	26200,00	36900,00	7,0%	7,0%	
Average	34,0%	26,7%	8,0%	24533,33	33766,67	7,7%	11,0%	
School H	Meerpolder	20,0%	33,0%	5,0%	25900,00	39200,00	8,0%	13,0%
	Berkel	36,0%	20,0%	7,0%	23300,00	31700,00	7,0%	9,0%
	Noordeinde	24,0%	40,0%	n/a	24400,00	34000,00	6,0%	2,0%
	Zuiderpolder	18,0%	42,0%	n/a	25900,00	38700,00	7,0%	7,0%
	De Wadden	9,0%	58,0%	n/a	30000,00	47300,00	8,0%	7,0%
	Westpolder	15,0%	51,0%	n/a	29800,00	48900,00	7,0%	9,0%
Noordpolder	29,0%	28,0%	6,0%	25800,00	35000,00	7,0%	7,0%	
Average	21,6%	38,9%	6,0%	26442,86	39257,14	7,1%	7,7%	

Source: CBS numbers 2010

Table 1 Descriptives of the areas where the schools are located.

Procedure

Before the study the ERIM Internal Review Board, Section Experiments was asked for permission regarding the procedures. After the ERIM approved, the schools were contacted. Also conform the ethical guidelines all participants' parents gave written approval of the procedure by responding to the letter (see **Exhibit 1**). Both participants in Rotterdam and in Heerlen were tested the same way, during school time. According to the ethical guidelines for testing children, the participants were asked to give answers to the questions verbally. One by one they have been taken out of class for a few minutes in order to participate in the test individually. The test started with a false-belief task (Wimmer & Perner, 1983) to test for Theory of Mind, and subsequently the outcome of the Dictator Game measured the child's generosity. The participating schools are used to create the nominal variable School.

MEASURES

Theory of Mind

The false-belief task in order to test for Theory of Mind (Wimmer & Perner, 1983) was performed by using two puppets (adjusted to the gender of the participant). The story that was told about the puppets goes as follows:

Puck/Pete was playing with his/her ball on the playground. Suddenly Puck/Pete needed to go inside and therefore needed to place his/her ball somewhere in order to find it again, since Puck/Pete wanted to play with the ball again later on. Puck/Pete decided to put the ball in the bucket/bag. In the meantime, Lizzy/Lex arrived on the playground and took the ball of Puck/Pete out of the bucket because she/he also wanted to play with the ball. Only when Lizzy/Lex leaves, she/he did not put the ball back into the original bucket, but placed it in an alternative hiding location. Then Puck/Pete comes back and the child was then asked: “where do you think Puck/Pete will look for its ball?” **Figure 2** shows a visual representation of the false-belief task.

The children that understand the false-belief situation and therefore answer by saying the original bucket/bag have passed the test for Theory of Mind, whereas the children who answered by mentioning the alternative hiding location (the location where the ball actually is), failed the test for Theory of Mind.

The original hiding location, either the bucket or the bag, changed regularly to reduce potential bias because of the child’s obtained intelligence from other classmates or even parents.

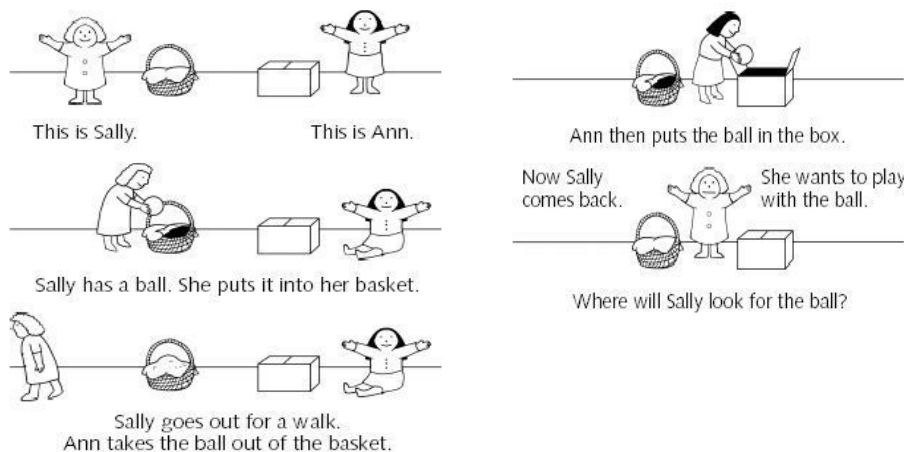


Figure 2 Visual representation of the false belief task. Here Sally has the role of Puck/Pete and Ann has the role of Lizzy/Lex.

Dictator Game

After the false-belief task, the children were told that he/she did so well during the first task, that he/she got permission to choose 6 stickers out of 60 stickers. This was the beginning of the Dictator Game, based on earlier ways of executing the dictator game among children (Fehr, Bernhard, & Rockenbach, 2008). When they had chosen the 6 stickers, they were asked again whether they liked all 6 of them. Until the child liked all 6 of his/her stickers, the Dictator Game continued.

Then the children were faced with the fact that there are other children at school who were not able to participate in this game. Therefore, these children would not receive any cool stickers today. However, if they wanted to, they could decide to give some of his/here stickers to the other children. The identity of the children was left unknown. The children were asked whether they were willing to share some of their stickers with the other children, and if so, how many and which one(s) they wanted to give to the other children. In order to divide the stickers two bowls were used, one bowl for the stickers they wanted to keep and the other bowl for the stickers they wanted to share. In order to make sure the

child fully understood the assignment, several checks were done (for example by asking them to point out the bowl for their stickers or asked them to explain the difference about the two bowls). The Dictator Game continued only until the child answered the questions correctly. The amount of stickers out of 6 the child was willing to share with the other children measured the generosity of that child (on a 6-point base).

Neighborhood Income

The income variable is labelled high/low. This label is based on the average income per household of the school's neighborhood (analysed on a very small scale), compared to the average income per household nationally. The average income per neighborhood is based on the data on average income per household in the concerned neighborhoods, gathered by the CBS (Central Bureau for Statistics, 2010). Schools in neighborhoods below national average were low-labelled and schools in neighborhoods above national average were high-labelled.

School

School is a nominal variable that divides the total sample into the 8 groups regarding the 8 different schools. School can be measured as a variable because of the 2 schools within the sample that are located in the exact same area, in 450 meters away from each other. This makes the difference between measuring the influence of areas and measuring the influence of schools in itself. **Table 2** shows some descriptives about the tested schools.

School	Socio economic area	Total amount students	Percentage ToM	Philosophy	Children with need for extra attention		Schedule preschoolers			Teachers				Highschool advice								
					Amount children in School	Percentage National average	Timings	Lunch at school	Free wedn. afternoon	Free friday afternoon	Male	Female	Total	Average age	Percentage male	Students per teacher	VMBO	HAVO	VWO	Total	Percentage VWO	
A	Low	167	56,25%	Public	30	17,96%	5,75%	08.45-15.00	✓	✓	✓	0	11	11	43 years	0,00%	15,18	12	2	6	20	30,00%
B	Low	297	55,55%	Roman Catholic	35	11,78%	5,75%	08.45-14.45	✓	✓	✓	3	19	22	43 years	13,60%	13,50	21	11	8	40	20,00%
C	Low	150	47,10%	Roman Catholic	50	33,33%	5,75%	08.25-14.30	✓	✓	✓	5	6	11	49 years	45,50%	13,63	11	4	2	17	11,80%
D	Low	131	63,63%	Public	52	39,69%	5,75%	08.30-14.30	✓	✓	✓	4	10	14	48 years	40,00%	9,36	14	1	2	17	11,80%
E	High	292	68,29%	Roman Catholic	7	2,40%	5,75%	08.30-14.30	✓	✓	✓	6	15	21	46 years	40,00%	13,90	7	10	10	27	37,00%
F	High	283	93,10%	Roman Catholic	0	0,00%	5,75%	08.45-15.00	✓	✓	✓	5	15	20	52 years	33,33%	14,15	7	5	24	36	66,67%
G	High	698	33,80%	Protestant	12	1,72%	5,75%	08.30-14.30	✓	✓	✓	5	44	49	35 years	11,36%	14,24	31	18	12	61	19,70%
H	High	507	31,58%	Public	32	6,31%	5,75%	08.30-14.30	✓	✓	✓	4	31	35	41 years	12,90%	14,50	13	19	8	40	20,00%

Table 2 Descriptives of the schools including socioeconomic area, total amount of students tested, percentage ToM, philosophy, children with need for extra attention, weekly school schedule, teachers and high school advice.

Source: www.1000scholen.nl

RESULTS

The children shared on average 1.05 out of 6 stickers in this study (St.Deviation=1.44, Skewness= 1.251 and Kurtosis= 0.737). To test for significant differences for gender or age a 2(gender) x 3(age) Analysis of Variance with dictator game results (amount shared) as the dependent variable has been conducted. Potential gender differences ($F(1,253)= 0.276, n.s.$), as well as potential age differences ($F(2,253)= 1.753, n.s.$) were not significant.

The propensity of sharing significantly differed based on Theory of Mind. This outcome is based on an independent sample t-test that was performed ($F(1,257)= 8.994, p<0.01$), using the dictator game as independent variable and Theory of Mind as the grouping variable. The children who passed the false-belief task shared 0.81 stickers on average, whereas the children who failed the false-belief task shared 1.3 stickers on average. These numbers are shown in **figure 3**.

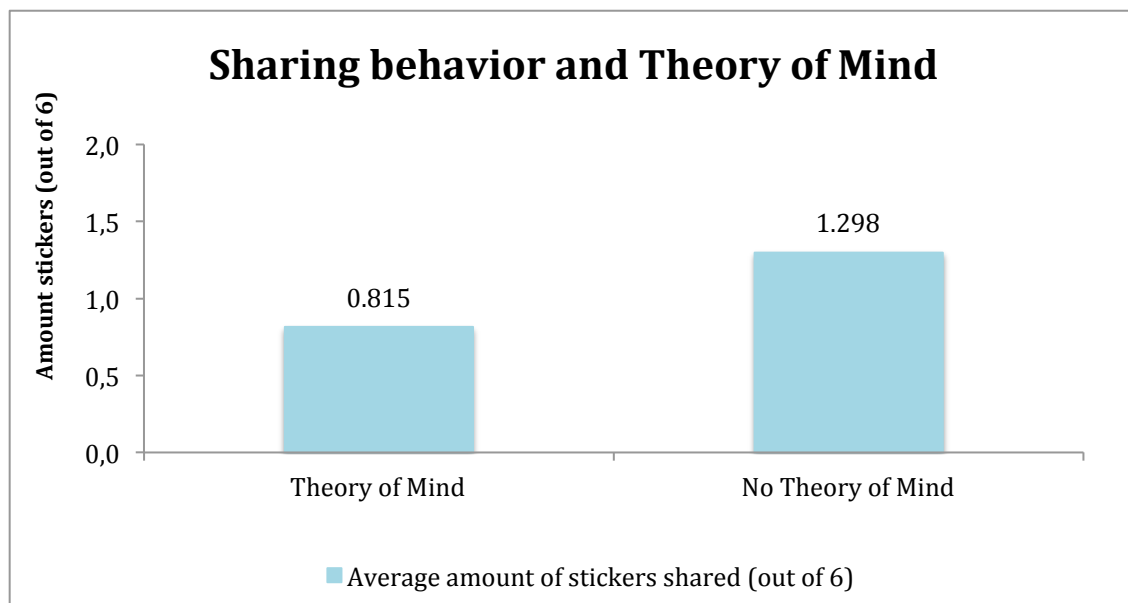


Figure 3 Outcome sharing behavior/Theory of Mind for total sample (N=259).

To test the second hypothesis income was added as a moderating variable, however the results show an insignificant effect ($\beta=0.33, n.s.$) of income on the relationship between Theory of Mind and generosity.

For the third hypothesis a linear regression was performed to predict sharing behavior based on Theory of Mind, Family Income per Neighborhood and School. Therefore the dependent variable is again sharing behavior, and the independent variables in this model are Theory of Mind, Neighborhood Income and School. A significant regressions equation was found ($F(3,255)=8.394, p<0.000$), with an R^2 of 0.09. The standardized coefficients of the variables are shown in **figure 4**. School is a significant predictor for generosity and shows a positive relationship. Comparing the variable's coefficients show a larger effect of school on sharing behavior, then for Theory of Mind on sharing behavior.

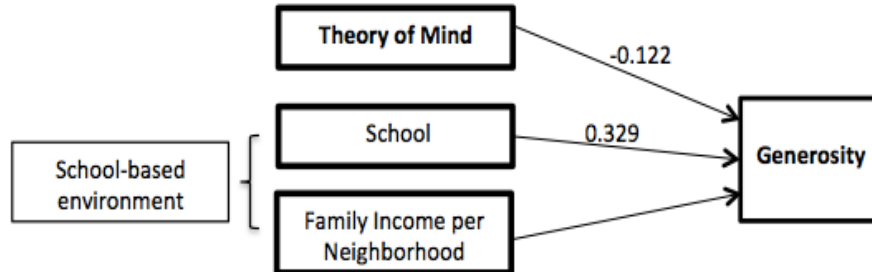


Figure 4 Linear Regression model of the School-Based environment with dependent variable generosity and independent variables ToM, school and Neighborhood Income. Standardized beta weights are given for each significant predictor.

To make sure that this linear regression model is reliable and stable, it is needed to test for multicollinearity among the independent variables by calculating the variance inflation factor (VIF). The coefficients output – collinearity diagnostics results show for Theory of Mind a VIF value of 1.070, income a VIF value of 4.992 and for school a VIF value of 5.099. These obtained VIF values both are between the number 1 to 10, so it can be concluded that these variables are reliable and stable regression coefficients.

Figure 5 shows a graphic overview of this model, regarding the distribution among average income per household per neighborhood of the schools, in comparison with sharing behavior (out of 6 stickers). The average income per neighborhood is based on the numbers of the CBS (Central Bureau for Statistics, 2010). The figure shows an overall trend regarding the child's generosity compared to average income per neighborhood: namely the children in low-income neighborhoods share on average less and the children in high-income neighborhoods share on average more. Still the outcome of the tested model shows that Family Income per Neighborhood does not have a significant effect on generosity.

However, the model showed that School does have a positive significant effect on generosity. Looking at **figure 5** again, it visually shows the findings of Income and School. At first the trend is noticed of generosity among Income, namely that children from schools in low SES areas (school A to D) share less and children from schools in high SES areas (school E to H) share more on average. But, when taking a closer look at the school itself, it is interesting to see that not all schools follow that trend. Namely, school A and school E do not follow this overall trend. School A deviates from the other low-income schools, since the average amount of stickers shared is obviously higher. School E deviates from the other high-income schools, noticing the average amount shared on this school is the lowest for high-income schools and is comparable to the low-income schools. Also school F shows almost the same outcome in the amount of stickers shared on average as school A, who is located in the low-income area. This means that even if it may seem that on average high-income areas share more compared to low-income, still in the end it is the school who is able to have a certain amount of control over the sharing behavior of the children.

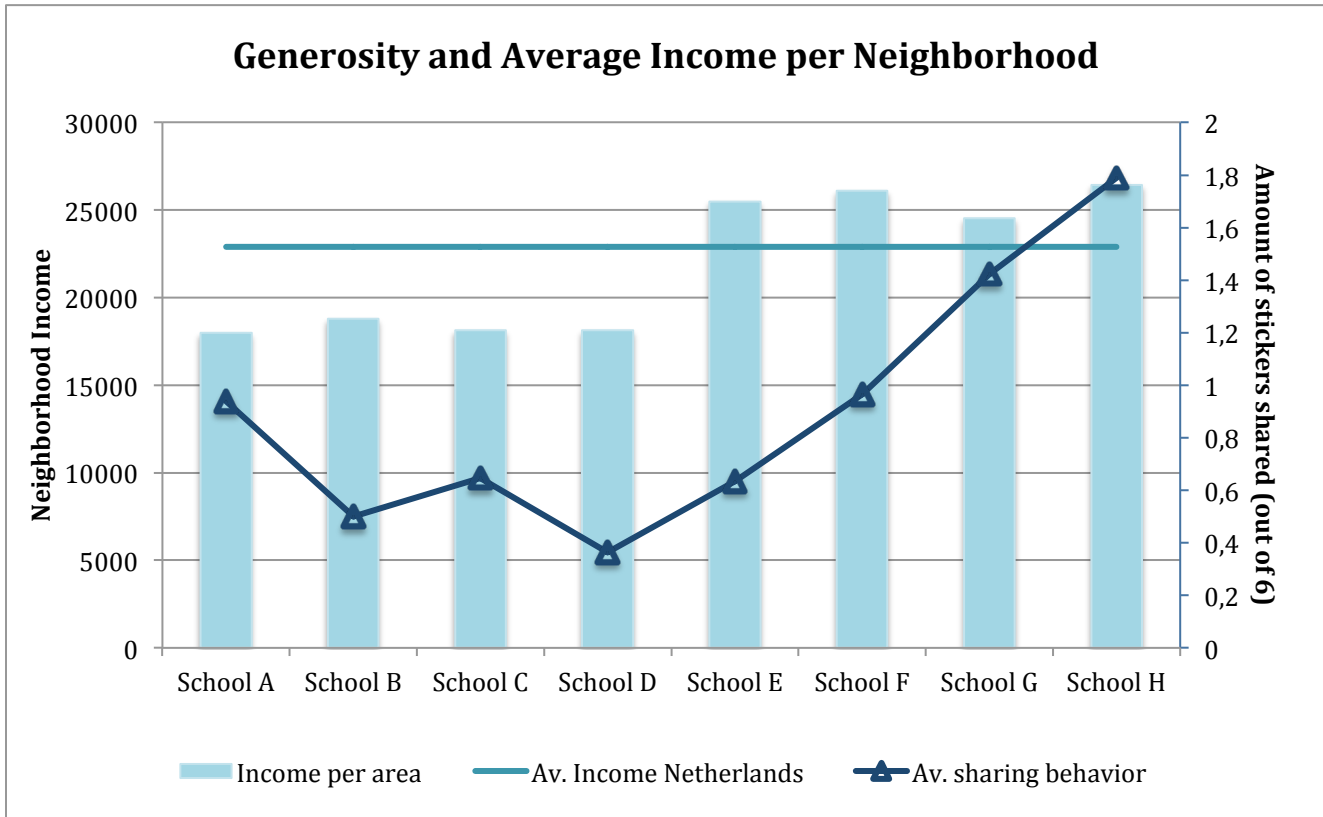


Figure 5 Generosity per school and Average Income per Neighborhood. Comparing the differences of the variables for the tested schools in the Netherlands. Average amounts are given for each variable.

DISCUSSION

Inspired by former research (Cowell et al., 2015; Vuylsteke & Wessels, 2015; Cowell et al., 2016), this study has investigated children's social behavior, and whether this social behavior gets influenced by the ability of children to read someone else's intentions (in terms of having a Theory of Mind). Furthermore this study has extended former research by adding social environmental factors into the current model, which provides new insights for future research. The study has been tested among pre-schoolers from both low and high socioeconomic areas within the Netherlands.

As the results show, there is a significant negative correlation between Theory of Mind and generosity. This outcome explained in practice means that when a child understands another person's behavior based on intentions, the child shares fewer stickers. This outcome is in line with the 'curious' results of Cowell et al. (2015). However, also according to the results but not in line with the hypothesis based on previous research (Cowell et al., 2015, Vuylsteke & Wessels, 2015), is the fact that this phenomenon holds regardless of whether the child lives in a high or low SES area in terms of income.

The reason why this outcome is called curious is because people intuitively would expect that if someone is able to understand someone else's situation, that this person is able to sympathize. This person should understand and feel bad for the other person's situation of otherwise receiving fewer stickers or not receiving any stickers at all. Since, as they were taught at home and at school, this would be not fair. So, it would logically make a person willing to share more instead of less. However, the data show interestingly the opposite behavior. So what does the data tell us then? One explanation for this contradicting behavior might be the following. When children have a Theory of Mind, they become less naïve. Less naivety makes it that a child perceives people's intentions more realistically. It

means that they understand that people might have other intentions and people will not always go for the group. Keeping this in mind when taking a look at the child's sharing behavior implies that the child becomes more forethoughtful due to its social intelligence. The ability of reading people's intentions thus led to a more selective distribution. Comparing this behavior to children who do not have a Theory of Mind yet indicates that naïve children still believe other people all have the same intentions and therefore they believe they deserve to receive the same recourses.

Based on what was experienced when testing the children another speculation emerged. Namely, it was notable that the children who appeared more confidently happened to be the children that in the end succeeded the Theory of Mind test. So, could it be that having a Theory of Mind makes you more confident? This question was obviously not tested for this research but this speculation might encourage future research. Again, when you have a Theory of Mind, you are able to read a person's intentions based on its social behavior, so you understand its situation or its position of which this behavior comes from. This makes children with a Theory of Mind able to assess a situation and estimate potential harm in terms of people's reactions, which might give them a sense of security. Being able to assess a situation provides a certain feel of having it all under control, which is a confidence booster. So, when they assess the situation of sharing with an unknown other, might make them aware of the fact that it couldn't do them so much harm to share less or not share at all since the unknown others won't know them either so they are not in the position to hurt them in any way. Also, considering self-assurance, it might be the case that for these children, these stickers are a symbol for status. In preschool in the Netherlands it is mostly the case that a sticker is a reward for good behavior or a reward for something the child has accomplished. So when a child has a Theory of Mind, this child knows he or she gave the right answer when participating in the false-belief task and thus feels confidently

enough to know he or she earned a reward. This might result in the child feeling it as the right thing to own all six stickers or at least more than average because the child believes he or she deserves it for giving the right answer. Since these children are a step ahead of the other children in their class without Theory of Mind, there are chances that they are already used to receiving a reward (in the form of stickers for instance) more often without being used to share this reward with others. The amount of stickers as a reward might be a confidence booster and a certain symbol for status for the children with a Theory of Mind. So when they return to their class they can show off their reward again to maintain their image. In line with earlier findings by Willer et al. (2011), this could explain the behavior about those who are less prosocial tend to be more driven by status. Again, this was not tested for this study so further research is needed to see whether this speculation holds.

It is interesting to remark that regarding the possible statements, the first explanation is more focused on the other person, and the second speculation is more focused on the self. However, both have one outcome in common. Namely, it is important to note that the children with a Theory of Mind in fact did not stop sharing, but they start sharing less. So, the amount shared by the child is partly influenced by the ability to read people's intentions that the child believes people might have. This means that social intelligence has a certain influence on moral judgements. It seems that this 'deciding to share' process goes as its social intelligence skill, and thereafter the child uses it to eventually form a moral judgement about the person's intentions when deciding how much to share. However, according to a former study there exists also a process in some cases where it works the other way around. It discusses that the way morality was taught influences the way a person assesses another person's intentions (Knobe, 2005; Loureiro & de Hollanda Souza, 2013). So it could also be the case that the way children are getting raised by its social environment develops their moral judgement, which then influences the way they apply

their Theory of Mind later on. This would imply that the way the children eventually develop their Theory of Mind is already influenced in an even earlier stage in life. Future research would undoubtedly provide new insights concerning this topic. All the same, it is clear and also proven by the results in this study that social intelligence and moral judgements are interconnected.

In addition to the existing research about children's cognitive capability and its influence on the children's social behavior, this study also investigated several social environmental factors that could influence the child's sharing behavior. These social environmental factors are divided into home-based and school-based factors, where de Vries (2016) investigated the factors home-based and this research covers the school-based environment. The school-based environment for this research exists of two variables that are hypothesized to affect the child's social behavior, namely school (as a nominal variable) and the average income of the neighborhood (as an ordinal variable). The results show that indeed the model of the school-based environment is a significant predictor for generosity. However, average income per neighborhood was not significant, so again income does not influence the sharing behavior. For this model, Theory of Mind correlates negatively with sharing behavior and School correlates positively with sharing behavior, where school has a greater effect on generosity according to figure 4. This means that the more Theory of Mind, the more selfish the child gets, however the school is able to control this behavior into the opposite direction. The environment the child lives in, regardless of income, but more importantly the school of the child influences the child's sharing behavior. It shows that the school affects a child's perception and therefore in a certain way controls a child's 'social' decision process about the amount of stickers he or she is willing to share with another unknown person. In other words, the school is able to provide a certain frame of reference

the child uses when behaving socially, regardless of the ability to read someone else's intentions. It seems that in addition to the reward-system speculation that is mentioned above about owning or sharing stickers, that it all comes down to the habits those children have acquired. In this case it would point to the habits the children have acquired in preschool. Still, the next question then immediately rises regarding those schools, namely what is it exactly about those schools that will make a difference in the children's sharing behavior? This question cannot be fully answered yet because school was only a nominal variable for this research, so other than the school itself there was nothing measured. However, some suggestions can be made based on the experience of visiting those schools and the descriptives shown in table 2.

Habits that children acquire in preschool, which was already discussed above, might have an influence on the children's sharing behavior. This could be in line with two interesting factors that we have noticed when analysing table 2, namely the amount of students per teacher and the time schedule. First, the amount of students per teacher compared to the amount of recourses shared shows an interesting trend. Namely, it shows that the schools where the amount of teachers is less, so more students per teacher, these children share on average more recourses. This is interesting because at first one would expect that when there are more teachers, apart from the fact that a school then seems well-heeled, children get more individual attention, which is expected to improve a child's learning curve in terms of behavior and knowledge. However, it seems that actually it is the case that when a child receives more individual attention, the child is basically sharing less recourses. This implies that when there is a bigger group of children per teacher, children get more dependent on each other, and the 'human is a social animal' story holds. It seems that they start to share more recourses. When analysing this data in SPSS it definitely showed that something was happening there, but more schools are needed within a larger

study sample for further research to see whether this hypothesis holds. This also holds for the second descriptive that showed a trend in table 2, namely the school timetable. The eight schools show slightly different timetables for the pre-schoolers in terms of breaks and free afternoons on Wednesday and Friday. What was noticed is that the schools where more time is spent in school by the children, so the less free time the child has, the more recourses the children shared on average on that school. A suggestion that could be made regarding this trend is that the children, who spend more time with each other on average during a week, are again more dependent on each other. This might explain their more pro-social behavior. Also here further research is needed to compare more schools within a larger study sample to see whether this assumption is applicable.

Both the amount of children per teacher and the time the child spends on school are frequencies for a child, so both are certain regularities and thus certain habits the child is used to. Therefore, these assumptions could be in line with the explanations about the outcomes that are already discussed above about a child's perception, a child's level of confidence or self-assurance and a child's habits that he or she acquired in a school-based environment. What it specifically is that makes the school an influencer on children's behaviour needs to be investigated in further research. Besides the fact that more schools are needed within a sample to test these concepts in further research, also more schools within the same local area are needed to test for more precise results. This study was able to measure school as a nominal variable since two schools were located in 450 meters from each other, so the neighborhood might not have influenced the outcome. Still, this measure only holds for two out of the eight schools that have been investigated. Therefore further research is recommended, if possible, among more primary schools located in the same neighborhood, on a very local scale.

In conclusion, what is clear, as we all know and now is also shown by the data, is the fact that school matters. However, even though the linear regression model showed significant results, still the model only explains 9% of the outcome of the model. This means that it is needed to do further research concerning the social environment of the child. Other factors that are part of a child's school-based environment need to be investigated, such as the amount of children per teacher, the education of the teacher or the amount of time the child spends in school, in order to try to increase the explanation of the model.

PRACTICAL IMPLICATIONS

Until now only the development of Theory of Mind has been discussed with regards to generosity. The results of this study show that a Theory of Mind has a significant negative effect on generosity, regardless of the child's origin (Cowell, Samek & Decety, 2015; Cowell, Lee, Malcolm-Smith, Selcuk, Zhou & Decety, 2016). But when eventually having a Theory of Mind raises questions as what is the advantage of having it, or what can we do with it in everyday life. Also school has a positive significant effect on generosity, which means that children can be influenced by its social environment. In fact, the environment influences both children and adults every single day (Forsyth, 1990; Triandis & Suh, 2002). People get influenced by its environment concerning its peers (Doland & Adelberg, 1967), but also by influences that are pushed by the business world (Ayanwale, Alimi & Ayanbimipe, 2005). Also about the significant finding of the relationship between school and generosity some questions may rise about what to do with this new insight.

Here, some practical implications for appropriate business approaches will be debated regarding the significant variable Theory of Mind, as well as for the significant variable school. First, Theory of Mind will be discussed in terms of how to use these insights for an appropriate sales and marketing approach. Second, the new insight of this study, namely the school itself as a significant influencer on the children's social behavior, will be examined. Some potential approaches will be discussed about how this insight could be as an advantage for the schools business wise.

Theory of Mind and business

Despite the fact that every grown, healthy human being has a Theory of Mind, still there is a lack of use of a Theory of Mind by adults in daily life (Keysar, Lin & Barr, 2003). This means that in several circumstances, where it is useful to read or interpret someone's

actions or reactions, people will not rely on the use of this refined ability. From a business perspective these circumstances consist of internal and external organizational situations, wherein using Theory of Mind could be of significant added value (Foss & Stea, 2014). Some examples of these situations are discussed below.

Internally, within the company, the principals and agents situations holds within the business (Eisenhardt, 1989). Using a Theory of Mind will improve the relationship between the agent and the principal (employer and employee) in twofold. A manager (principal) applying a good Theory of Mind will be able to better read the intentions and thus understand its agent (employee), which makes him able to adjust the agent's rewards (Baker, Gibbons & Murphy, 1994). Vice versa, using a good Theory of Mind by the employee (agent) makes him or her able to better understand the intentions, meanings and efforts of the manager (principal). So, a Theory of Mind used by principal and agent, positively influences the workplace's atmosphere in terms of understanding each other's intentions and thus accepting each other's actions and efforts more (Foss & Stea, 2014).

Externally, a Theory of Mind can also be applied to external parties that are important for the company. How applying a Theory of Mind will be useful in situations with external parties is explained below using two examples, one for the sales department and the other for the marketing department (Dietvorst, Verbeke, Bagozzi, Yoon, Smits & van der Lugt, 2009; McAlister & Cornwell, 2010). The sales department needs their salespeople to use Theory of Mind since it enables them to better understand the interpersonal cues and signals when having a sales call for instance. A Theory of Mind, in terms of interpersonal-metalizing skills (Dietvorst, Verbeke, Bagozzi, Yoon, Smits & van der Lugt, 2009), makes a salesperson more capable of reading the person's intentions and goals in front of them in order to make a suitable offer. Even when this person is less generous because of his cognitive capabilities, it will still be of added value because it makes the person able to

efficiently divide his recourses. The salesperson will be less naïve and thus will make a more thoughtful decision when it comes to distributing limited recourses in order to get the most out of it. Considering business deals, a salesperson containing well-developed Theory of Mind, might be manipulative when achieving to make the best deal. In business, being manipulative therefore could be of an advantage for arranging good deals and thus good profits, which in the end makes your boss happy. For the marketing department, the firm also needs employees to use a Theory of Mind since marketing is all about meeting the wants and needs of the targeted customer (Kotler & Armstrong, 2010). Therefore understanding the actions and reading the cognitive mind of the targeted customer and then using these insights for marketing strategies is key. Also, considering branding (Keller & Lehmann, 2003), the study of McAlister and Cornwell (2010) shows that Theory of Mind is a significant predictor when forming an opinion about a brand already for the age of 3-5 years old. This suggests that marketers should embrace Theory of Mind of its customer and even more develop its own cognitive abilities further (Dietvorst, Verbeke, Bagozzi, Yoon, Smits & van der Lugt, 2009). This way a marketer might eventually start relying, among other things, on its Theory of Mind abilities when making marketing related decisions. These decisions could suit the targeted customer better, which will trigger the customer's Theory of Mind and so its mental representation of the brand and so it finally builds brand equity (Keller, 2011).

Altogether, these examples show that a company benefits from employees with strong cognitive capabilities, as Theory of Mind. However, it is also the case that a company is instantly looking for employees who show prosocial behavior (Maznevski & DiStefano, 2000). Team players within a company are very popular and according to this study, these team players will turn into future global leaders. This is interesting, since there is a negative correlation between Theory of Mind and prosocial behavior, such as generosity. In case of

analysing vacancies, the majority of the companies ask in their descriptions for team players. It therefore seems to be the case that when it is needed to choose between either cognitive capabilities or social capabilities, preference would be given to prosocial candidates. Also when random people are asked whether they would prefer prosocial colleagues or smart colleagues, or in other words colleagues who will go for the team or colleagues who will go for themselves, again not surprisingly the majority prefers team player colleagues. So, at first every company wants employees with well-developed cognitive capabilities in order to improve the win-win for the firm internally (employer/employee relationships) as well as externally (sales conversations, marketing efforts). However, in the end, it is the generous people that get hired and it is the generous managers who will become the global leaders of today (Maznevski & DiStefano, 2000). The preference for team players refers back to the fact that people are social animals, people prefer working in groups and their environment influences them. This implies that also your colleagues will be of importance for your own success and future career.

School and business

The results of this study show an interesting new finding, namely the preschool of the child plays a role in the development of their prosocial behavior. To let the results speak, schools matter, but even more interesting here is the fact that in particular preschools are important. Apart from the fact that this study proved that the preschool influences the child's sharing behavior, it is also a crucial stage in life. Multiple studies have shown that between the age of 3 and 6 years old children start developing ethical attitudes and cognitive capabilities (Wimmer & Perner, 1983; Keysar, Lin & Barr, 2003). In addition, several studies discussed the fact that generosity is linked to different factors including trust (Andreoni & Petrie, 2004; Hardy & van Vugt, 2006; Simpson & Willer, 2008), where trust seems to be developed also under the age of 6 years old (Harbaugh, Krause, Liday Jr. &

Vesterlund, 2002). It shows that the age between 3 and 6 years old is a crucial stage in the development of the child, which also happens to be the age the children are in preschool. This insight makes an interesting case regarding practical implications.

Until now mostly universities and some private schools are competing by doing some branding and advertising in order to gather (international) students (Gatfield, Barker & Graham, 1999; Gray, Fam & Llanes, 2003). However, the importance of preschool, as stressed above, makes it relevant for primary schools to start market themselves as well. In the Netherlands preschool is part of primary school, which is just compulsory education imposed by the government. No differentiation is communicated yet about the difference among primary schools except for some generally known information like the neighborhood or the timetable of the school. So, now we have seen that differentiation does exist among primary schools, and the quality of primary schools matter for the cognitive development of a child, it can be put into practice.

The awareness about the impact the primary school has on the development of the children needs to be used as an advantage. Primary schools can use this knowledge business wise by creating a strategy around it in order to differentiate itself from other schools. Because parents are the target consumer here, the marketing communication needs to be focussed on them. Then the question rises about what should a school communicate? Regarding the results of this study it is hard to say which factors are the big influencers since these were not tested for this research. However, some studies tested for factors that are important to the parents (West, 1992; Mulla 2015). Factors a parents looks into when choosing a school are for example good discipline, pleasant atmosphere, suits child's needs, exam results, quality of teaching, location and activities. Considering intelligence, it is important to be surrounded by children who are smart since the environment influences a person as well. This makes it of bigger importance to see which schools deliver more high-

educated students. Now taking into account the knowledge of this study ensures that other factors will become more important. As this study suggested for instance the amount of students per teacher, the timetable and the way the children learn certain habits in terms of prosocial behavior might be important. As the business world prefers prosocial behavior and this will be already acquired in preschool, this will be a new factor of big importance. Even though it seems odd for a primary school to communicate about adult former students since it was already a long time ago, according to the results and former research it is still relevant to communicate. This relevancy refers to the fact that desired behavior was already taught in preschool and can make a person the leader of today. Therefore, also the other way around holds, that if someone went to a preschool that was not able to provide the ethical morals and values that are desired in the big world, it will be hard to get to the top.

Considering these new insights for a primary school to differentiate itself from other schools, a few critical notes need to be made. First, when primary schools start advertising it could create on the one hand overcrowded and on the other hand empty schools, which could be a problem. This could influence pricings, favouritism and discrimination when selecting students for primary schools and could increase the gap between the rich and poor schools. Second, even if this gap increases it won't always be the case that only the rich schools deliver the best students. As this study shows, it is actually not about income, but about other factors influencing the children.

Altogether, preschool creates the leaders of today. It is important for the preschool, the teacher, the parents and the government to realise that. The preschool needs to focus on the education, communication and the way it guides its students, the teachers amongst other things need to focus on the children's prosocial behavior, the parents need to choose the school wisely and the government needs to guarantee proper regulation concerning primary schools.

BIBLIOGRAPHY

- Aguilar-Pardo, D., Martinez-Arias, R., & Colmenares, F. (2013). The role of inhibition in young children's altruistic behaviour. *Cogn Process*, *14*, 301-307.
- Andreoni, J., & Petrie, R. (2004). *Public goods experiments without confidentiality: A glimpse into fund-raising*. (Vol. 88). Journal of Public Economics.
- Ayanwale, A. B., Alimi, T., & Ayanbimipe, M. A. (2005). The Influence of Advertising on Consumer Brand Preference. *Journal of Social Science*, *10* (1), 9-16.
- Bagozzi, R. P., Verbeke, W. J., Dietvorst, R. C., Belschak, F. D., van den Berg, W. E., & Rietdijk, W. J. (2013). Theory of mind and empathic explanations of Machiavellianism: A neuroscience perspective. *Journal of Management*, *39*, 1760-1798.
- Baker, G., Gibbons, R., & Murphy, K. J. (1994). Subjective performance measures in optimal incentive contracts. *Quarterly Journal of Economics*, *109*, 1125-1156.
- Becker, G. S. (1974). A Theory of Social Interactions. *Journal of Political Economy*, *82* (6), 1063-1093.
- Benenson, J. F., Pascoe, J., & Radmore, N. (2007). *Children's altruistic behavior in the dictator game* (Vol. 28). Evolution and Human Behavior.
- Blair, C., & Razza, R. P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development*, *78* (2), 647-663.
- Bowlby, J. (1982). *Attachment and loss: Vol. 1 Attachment*. New York: Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York: Basic Books.
- Bowlby, J. (1980). *Attachment and loss: Vol. 3. Sadness and depression*. New York: Basic Books.
- Carlson, S. M., Zelazo, P. D., & Faja, S. (2013). *The Oxford Handbook of Developmental Psychology* (Vol. 1). Body and Mind.
- Casey, B. J., Tottenham, N., Liston, C., & Durston, S. (2005). Imaging the developing brain: what have we learned about cognitive development? *Developmental cognitive neuroscience*, *9* (3), 104-110.
- Cowell, J. M., Lee, K., Malcolm-Smith, S., Selcuk, B., Zhou, X., & Decety, J. (2016, May). The development of generosity and moral cognition across five cultures. *Developmental Science*, 1-12.
- Cowell, J. M., Samek, A., & Decety, J. (2015). The Curious Relation between Theory of Mind and Sharing in Preschool Age Children. *PLoS One*, *10* (2), 1-8.

de Vries, M. J. (2016, August). The Relationship between Theory of Mind and Generosity in Pre-School Age children (4-6 years). The Home-Based Involvement.

DeMulder, E. K., Denham, S., Schmidt, M., & Mitchell, J. (2000). Q-sort assessment of attachment security during the preschool years: Links from home to school. *Developmental Psychology*, 36, 274-282.

Denham, S. A. (1998). *Emotional development in young children*. New York: Guilford.

Dietvorst, R. C., Verbeke, W. J., Bagozzi, R. P., Yoon, C., Smits, M., & van der Lugt, A. (2009). A Sales Force-Specific Theory-of-Mind Scale: Tests for Its Validity by Classical Methods and Functional Magnetic Resonance Imaging. *Journal of Marketing Research*, 46 (5), 653-668.

Doland, D. J., & Adelberg, K. (1967). The Learning of Sharing Behavior. *Child Development*, 38 (3), 695-700.

Dunn, J., & Brown, J. (1993). Early conversations about causality: Content, pragmatics, and developmental change. *British Journal of Developmental Psychology*, 11, 107-123.

Dvash, J., & Shamay-Tsoory, S. G. (2014). Theory of Mind and Empathy as Multidimensional Constructs. *Topics in Language Disorders*, 34 (4), 282-295.

Eisenhardt, K. M. (1989). Agency Theory: An Assessment and Review. *Academy of Management Review*, 14 (1), 57-74.

Engel, C. (2011). Dictator games: a meta study. *Experimental Economics*, 14 (4), 583-610.

Fantuzzo, J., McWayne, C., & Perry, M. A. (2004). Multiple Dimensions of Family Involvement and Their Relations to Behavioral and Learning Competencies for Urban, Low-Income Children. *School Psychology Review*, 33 (4), 467-480.

Fehr, E., & Fischbacher, U. (2003). The nature of human altruism. *Nature* (425), 785-791.

Fehr, E., Bernhard, H., & Rockenbach, B. (2008). Egalitarianism in young children. *Nature* (454), 1079-1084.

Fodor, J. A. (1992). A theory of the child's theory of mind. *Cognition*, 44 (3), 283-296.

Forsyth, D. R. (1990). *Group dynamics (2nd ed.)*. Pacific Grove, California, US: Brooks/Cole.

Foss, N., & Stea, D. (2014). Putting a Realistic Theory of Mind into Agency Theory: Implications of Reward Design and Management in Principal-Agent Relations. *European Management Review*, 11, 101-116.

Frith, C., & Frith, U. (2005). Theory of mind. *Current Biology*, 15 (17), R644-R645.

Gatfield, T., Barker, M., & Graham, P. (1999). Measuring communication impact for university advertising materials. *Corporate Communications: An International Journal*, 4 (2), 73-79.

Goldman, A. I. (2012). Theory of Mind. In E. Margolis, R. Samuels, & S. Stich, *Oxford Handbook of Philosophy and Cognitive Science*.

Gray, B. J., Fam, K. S., & Llanes, V. A. (2003). Branding universities in Asian markets. *Journal of Product & Brand Management* , 12 (2), 108-120.

Harbaugh, W. T., Krause, K., Liday Jr., S. G., & Vesterlund, L. (2002). Trust in Children. In E. Ostrom, & J. Walker, *Trust and Reciprocity: Interdisciplinary Lessons for Experimental Research*.

Harbaugh, W. T., Krause, K., Liday, S. G., & Vesterlund, L. (2003). Trust in Children. *Trust and reciprocity: interdisciplinary lessons from experimental research* , 302-322.

Hardy, C. L., & van Vugt, M. (2006). *Nice guys finish first: The competitive altruism hypothesis*. (Vol. 32). *Personality and Social Psychology Bulletin*.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., et al. (2005). Economic man in cross-cultural perspective: Behavioral experiments in 15 small-scale societies. *Behavioral and Brain Sciences* , 28 (6), 795-815.

House, J. S., Landis, K. R., & Umberson, D. (1988). Social Relationships and Health. *Science* , 241 (4865), 540-545.

Keller, K. L., & Lehmann, D. R. (2003). How Do Brands Create Value? *Marketing Management* , 26-31.

Keysar, B., Lin, S., & Barr, D. J. (2003). Limits on theory of mind use in adults. *Cognition* , 89, 25-41.

Knobe, J. (2005). Theory of Mind and moral cognition: exploring the connections. *Trends in Cognitive Sciences* , 9 (8), 357-359.

Kotler, P., & Armstrong, G. (2010). *Principles of Marketing*. Pearson Education.

Leipold, K., Vetter, N. C., Dittrich, M., Lehmann-Waffenschmidt, M., & Kliegel, M. (2013). Individual and developmental differences in the relationship between preferences and theory of mind. *Journal of Neuroscience, Psychology, and Economic* , 6 (4), 236-251.

Li, Y., Li, H., Decety, J., & Lee, K. (2013, July 10). Experiencing a Natural Disaster Alters Children's Altruistic Giving. 1-10.

Loureiro, C. P., & de Hollanda Souza, D. (2013). The Relationship between Theory of Mind and Moral Development in Preschool Children. *Paideia* , 23 (54), 93-101.

Maznevski, M., & DiStefano, J. (2000). Global leaders are team players: Developing global leaders through membership on global teams. *Human Resource Management* , 39,2 (3), 195-208.

McAlister, A. R., & Cornwell, T. B. (2010). Understanding: Links to Theory of Mind and Executive Functioning. *Psychology & Marketing* , 27 (3), 203-228.

McCulloch, A., & Joshi, H. E. (2001). Neighbourhood and family influences on the cognitive ability of children in the British National Child Development Study. *Social Science & Medicine* , 53 (5), 579-591.

Miller, D. T., & Ratner, R. K. (1998). The disparity between the actual and assumed power of self-interest. *Journal of Personality and Social Psychology* , 74 (1), 53-62.

Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., et al. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceeding of the National Academy of Sciences of the United States of America* , 108 (7), 2693-2698.

Mol, M., Broomans, M., & Kooistra, J. (n.d.). *10.000 scholen*. Retrieved from [www.10000scholen.nl](http://10000scholen.nl/zoeken?search%5Bcity%5D=Heerlen&search%5Bprovince%5D=N-L-LI&page=1&search%5Beducationtype%5D=1&search%5Bdenomination%5D=&aantal_leerlingen=0%3B3100)
http://10000scholen.nl/zoeken?search%5Bcity%5D=Heerlen&search%5Bprovince%5D=N-L-LI&page=1&search%5Beducationtype%5D=1&search%5Bdenomination%5D=&aantal_leerlingen=0%3B3100

Moore, C. (2009). Fairness in Children's Resource Allocation Depends on the Recipient. *Psychological Science* , 20 (8), 944-948.

Olson, M. (1965). *The logic of collective action: Public goods and the theory of groups*. Cambridge, MA: Harvard University Press.

Piliavin, J., & Charng, H. W. (1990). Altruism: A review of recent theory and research. . *Annual Review of Sociology* , 16, 27-65.

Robbins, E., & Rochat, P. (2011). Emerging signs of strong reciprocity in human ontogeny. *Frontiers in Psychology* , 2, 353.

Schmidt, M. F., & Sommerville, J. A. (2011, October 7). Fairness Expectations and Altruistic Sharing in 15-Month-Old Human Infants. *PLoS One* .

Shaw, A., Montinari, N., Piovesan, M., Olson, K. R., Gino, F., & Norton, M. I. (2014). Children develop a veil of fairness. *Journal of Experimental Psychology* , 143 (1), 363-375.

Shields, A., Dickstein, S., Seifer, R., Giusti, L., Magee, K. D., & Spritz, B. (2001). Emotional Competence and Early School Adjustment: A Study of Preschoolers at Risk. *Early Education and Development* , 12 (1), 73-96.

Simpson, B., & Willer, R. (2008). *Turtle hunting and tombstone opening: Public generosity as costly signaling* (Vol. 71). *Social Psychology Quarterly*.

Singer, T., Seymour, B., O'Doherty, J., Kaube, H., Dolan, R. J., & Frith, C. D. (2004). Empathy for Pain Involves the Affective but not Sensory Components of Pain. *Science* , 303, 1157-1161.

Sloane, S., Baillargeon, R., & Premack, D. (2009). Do infants have a sense of fairness? *Psychological Science* , 196-204.

Smith, C. E., Blake, P. R., & Harris, P. L. (2013). I Should by I Won't: Why Young Children Endorse Norms of Fair Sharing but Do Not Follow Them. *PLoS One*, 8 (3).

Smith, E. R., Murphy, J., & Coats, S. (1999). Attachment to groups: Theory and measurement. *Journal of Personality and Social Psychology*, 77, 94-110.

Sodian, B., & Kristen, S. (2016). Theory of Mind. In J. A. Greene, W. A. Sandoval, & I. Bråten, *Handbook of Epistemic Cognition* (p. 530). Routledge.

Statistics, C. B. (2010). *Average income per household*. Retrieved from www.cbsinuwbuurt.nl:
http://www.cbsinuwbuurt.nl/#wijken2010_gemiddeld_inkomen_inwoner

Takagishi, H., Kameshima, S., Schug, J., Koizumi, M., & Yamagishi, T. (2010). Theory of mind enhances preference of fairness. *Journal of Experimental Child Psychology*, 105 (1-2), 130-137.

Triandis, H. (2001). Individualism-collectivism and personality. *Journal of Personality*, 69 (6), 907-924.

Triandis, H., & Suh, E. (2002). Cultural influences on personality. *Annual Review of Psychology*, 53, 133-160.

Vuylsteke, R. R., & Wessels, D. (2015, August). The relationship between Theory of Mind and generosity in children between 4 and 6 years old. (*Unpublished master's thesis*).

Willer, R., Feinberg, M., Flynn, F. J., & Simpson, B. (2011). Is generosity sincere or strategic? Altruism versus status-seeking in prosocial behavior. *Unpublished*.

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, 13 (1), 103-128.

APPENDIX

Exhibit 1 – Parental consent

Geachte ouders/verzorgers,

In week 24 zal er een kort onderzoek plaatsvinden in de groepen 1 en 2 op basisschool Windekind door Michelle de Vries en Annique Vaessen.

Wij, Michelle de Vries en Annique Vaessen, zijn bezig met onze scriptie voor de Master Economie en Bedrijfseconomie aan de Erasmus Universiteit Rotterdam en voor onze scriptie breiden wij een al bestaand onderzoek verder uit. Deze brief schrijven wij namens Willem Verbeke, Professor aan de bovengenoemde universiteit.

Enkele jaren geleden heeft er een onderzoek plaatsgevonden met als onderzoeksvraag: zijn kinderen tussen 3 en 6 jaar oud meer of minder bereid of te delen wanneer zij zich kunnen inleven in anderen. Dit heet het hebben van Theory of Mind. Theory of Mind is in het kort gezegd het vermogen van mensen om een beeld te vormen van het perspectief van een ander persoon. Het resultaat van dit onderzoek was dat kinderen die geen Theory of Mind hebben (dus zich minder goed in anderen kunnen verplaatsen) vrijgevinger zijn dan zij die dit wel hebben.

Wat gebeurt er tijdens dit onderzoek?

Het onderzoek zal door de kinderen vooral als een leuk spelletje worden ervaren. Dit zal er als volgt uitzien:

Deel 1 Theory of Mind

De kinderen krijgen een kort toneelstukje te zien van ongeveer 1 minuut waarin een poppetje ballen in emmers legt. Hier zullen wij hen een vraag over stellen. Uit hun antwoord op deze vraag kunnen wij afleiden in hoeverre zij zich kunnen inleven in het poppetje.

Deel 2 Bereidheid om te delen

Vervolgens zullen de kinderen stickers krijgen van ons waar we een vraag over stellen en vervolgens mogen ze deze mee naar huis nemen. Hieruit kunnen we opmaken in hoeverre een kind vrijgevig is.

Er zijn verder geen goede of slechte antwoorden, al hun antwoorden zullen ons helpen meer inzicht te krijgen in het thema ‘inlevingsvermogen’.

Het onderzoek duurt slechts 5 minuten en zal tijdens schooltijd worden uitgevoerd. De kinderen worden een voor een even uit de klas gehaald. Het onderzoek is volledig anoniem en het enige wat de kinderen ons geven is hun leeftijd en het beantwoorden van de vragen die hierboven zijn toegelicht.

Door strikte regelgeving omtrent onderzoeken bij kinderen, is ons onderzoek voorgelegd aan ERIM International Review Board. Deze commissie heeft ons onderzoek goedgekeurd.

Mocht u nog vragen hebben dan kunt u telefonisch of via e-mail contact met ons opnemen. Mocht u het onderzoek willen lezen waarover wij onze scriptie schrijven dan kunt u dat vinden via google: The curious relation between Theory of Mind and Sharing in Preschool Age Children (Jason Cowell et al.). Mocht u het niet kunnen vinden dan kunt u ons ook een mail sturen en dan zullen wij het onderzoek naar u sturen.

Indien u akkoord bent met de deelname van uw kind zouden wij u willen verzoeken om onderstaande gegevens in te vullen en deze brief ondertekend **uiterlijk vrijdag 10 juni** te retourneren bij de leerkracht.

Naam ouder/verzorger _____
Ouder/verzorger van _____
Groep _____

Hoogst genoten opleiding moeder* _____
Hoogst genoten opleiding vader* _____

Handtekening ouder/verzorger _____

Datum _____

*Deze informatie wordt strikt anoniem behandeld. Voor het onderzoek erg van waarde, maar niet verplicht om in te vullen.

Uw medewerking wordt door ons zeer op prijs gesteld.

Met vriendelijke groet,

Annique Vaessen en Michelle de Vries

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