Theory of Mind, Material Altruism and Family Context in Preschoolers

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Abstract

The relationship between theory of mind, material altruism, and family context was examined. Forty-one preschool children (16 females and 25 males) enrolled in a private school participated in the study. Results of this study showed no relationship between theory of mind and altruism. There were no significant correlations between theory of mind and family context. However, a significant correlation was found between altruism and one of the variables of family context (number of sibling a child has). Results were discussed and suggestions for future research were made.

Due to its complex nature, understanding the origin of morality has, for a long time, perplexed individuals including philosophers, psychologists, and educators. Typically, their questions center on the nature of moral judgments, including how individuals make moral judgments. Behaviors that are considered moral, however, are not unique to humans. Surprisingly, some animals (such as dolphins, marmoset monkeys—*Callithrix jacchus*—, chimpanzees), and even insects (such as termites and ants), can display "*moral"* behaviors (for more information, see Booth, 1989; Burkart, Fehr, & Efferson, 2007; Warneken & Tomasello, 2009). While defining morality as a uniquely human attainment remains debatable, there is no question that the most advanced morality belongs to humans. Moreover, morality is related to the understanding and caring for other minds. Thus, research has shown that very young children demonstrate behaviors that involve some aspects of morality (see Johansson, 2008; Moore, Barresi, & Thompson, 1998).

In the current study we explore an aspect of moral cognition by examining potential influences on young children's altruistic behaviors. Specifically, we study the relationship between theory of mind, family context, and material altruism. Altruism refers to actions that are performed with the intention of assisting another individual, while expecting no compensation in return (Bukatko & Daehler, 1998). In short, it is a selfless concern for others. In an altruistic act, the assistance is offered even if it necessitates some sacrifice (Monroe, 2002). According to Monroe (2002), this definition involves several important aspects:

1. Action is necessary for altruism: Good intentions or ideas are not good enough. These intentions, or ideas, have to be reflected upon as an action.
2. The action must involve a purpose, whether or not it is conscious or reflexive.
3. The goal of the action has to intent to assist another.
4. The intentions are more important than the results.

5. The actions should be unconditional. That is, the action must be performed in a way that does not entail any kind of compensation for the actor (altruist).
6. The action must involve a possible reduction or decrease in terms of the actor's level of comfort.

Children's altruistic behaviors involve understanding the other individual's mental states. This is because the tendency to help others also entails taking the other's point of view. That is, theory of mind and altruism are both centered on an individual thinking about others. Theory of mind "refers to the ability to reason and make inferences about another's mental states, and presupposes the ability to hold beliefs about another's beliefs or to mentally represent another's mental representation" (Jarrold, Carruthers, Smith, & Boucher, 1994, p. 446). Possibly, taking others' needs and desires (others' mental states) into consideration could facilitate a person's altruistic behavior. It seems that the more the individual knows about the other person's mental states (–what that individual thinks, wants, believes etc.), the more likely it is that he or she will perform an altruistic behavior. Surprisingly, however, few studies have addressed both theory of mind and altruism. While some researchers suggest a possible link between theory of mind ability and some aspects of altruism (e.g., giving up immediate gratification for the sake of other's well-being, see Moore et al., 1998), they refrain from specifying the precise nature of the relationship, or even establishing its existence. In sum, there is uncertainty regarding the nature of the theory of mind and altruism relationship, on both theoretical and empirical grounds (Moore & Macgillivray, 2004).

The limited literature addressing theory of mind and altruism suggest that mindreading ability, or knowing about another person's mental states, wants, or beliefs, can lead to altruistic acts, and that there is a connection between moral cognition and mindreading. Yet, there is some uncertainty about the relationship between moral cognition and mindreading. While some researchers suggest a connection between moral cognition and theory of mind (e.g., Batson, 1991), it is disputed by others (e.g., Blair, 1995; Sober & Wilson, 1998).

Recent research suggests that family context (e.g., number of siblings or family size) could influence children's theory of mind ability (see McAlister & Peterson, 2007), as well as the development of altruism (see Stewart-Williams, 2007). For instance, having more siblings would presumably provide more opportunities for a child to take the other person's perspective. In contrast, a child with no siblings would have few such opportunities. Furthermore, because moral behaviors are developed within a social context, family context could serve as a foundation for altruistic behaviors. We propose therefore that there is a relationship between moral behaviors such as altruism, knowing self and controlling one's own behavior (Piaget, 1960), along with the understanding of other's mental states, or theory of mind ability.

Given the above framework, the current study was designed to examine the relationships between theory of mind, material altruism, and family context. Specifically, the study sought to determine the influence of family context on theory of mind ability and material altruism, as well as the relationship between theory of mind and children's development of material altruism.

In this study it was hypothesized that there would be a relationship between (1) family context and children's theory of mind ability (2) family context and children's display of altruistic behavior, and that (3) having well-developed theory of mind would lead to children displaying higher levels of altruistic behaviors. These hypotheses were tested by having the children complete four theory of mind tasks and a material altruism task.

The study was conducted with children between the ages of 3 and five for several reasons. First, although 3-year-old children typically do not perform well on tasks designed to measure false belief understanding (Wimmer & Perner, 1983; Perner, Leekam, & Wimmer, 1987), an important aspect of theory of mind, they do have some understanding of others' mental states. Second, it is during this age range that significant changes occur in children's false belief understanding (Wellman, Cross, & Watson, 2001). Third, theory of mind seems to emerge at around the age of 3 and becomes adult-like at the age of 5. It follows that, theory of mind tasks would be too challenging for children younger than three years and too easy for children older than five years.

Few researchers have examined altruism in young children. For the purposes of the current study it was decided to adopt Grunberg, Maycock, and Anthony's (1985) UNICEF donation task. Most measures of altruism have been designed for older children or adults. For example, in one study the "cabinet task" is used to measure altruism where the experimenter holds many magazines in her hands and tries to place them in a closed cabinet. The expectation then is that the child will open the cabinet for the experimenter. Another similar task used to measure altruism involves the experimenter trying to hang a piece of clothing on a line and dropping a clothespin. She then, tries to reach the clothespin that is on the floor with no success. The child is expected to pick up the dropped clothespin and give it to the experimenter (see Warneken & Tomasello, 2009).

Clearly, altruism has many facets. The tasks mentioned above involve the child in helping others without depriving him or herself of anything valuable. At most the child would be placed in an inconvenient situation. For our study we wanted a task that would not only involve helping others, but also the relinquishing of something valuable. In other words, the task should assess material altruism as opposed any other type of altruism. To our knowledge, the UNICEF task (Grunberg et al., 1985) is the only such measure.

Method

Participants

Participating in the study were children (3-4-5 years old) attending a faith- based private preschool serving children from 2 to 5 years. A total of 41 children (16 females and 25 males) participated in the study. The participants' mean age at the start of the study was 57 months. According to the questionnaire filled out by the children's parents, the participants were mostly from high income families. All participants were White except for one who was Asian.

Design and Procedure

Participants were tested individually in a quiet location in a local private school. Four theory of mind (ToM) tasks were administered to the participants, and the resulting data were used to assign each child a total theory of mind score. After obtaining a total theory of mind score, participants were tested on a material altruism task (UNICEF task). Parents were asked to fill out a questionnaire to provide information about their family context.

Instruments

Theory of mind tasks. Given the overall purpose of the study it was considered important to obtain a precise or valid measure of children's theory of mind. For this purpose we chose to use four theory of mind tasks; an approach that differs from that used by other researchers (e.g., Chin & Bernard-Opitz, 2000).

In the study, each child was presented with four theory of mind tasks as follows: (1) change in location, (2) appearance-reality, (3) unexpected contents, and (4) misleading picture. The theory of mind tasks procedures primarily followed Lundy's (2002) study, as did the wording of the theory of mind questions.

1. Change in location task. The change in location task similar to the one used by Wimmer and Perner (1983) was used in this study. Two research assistants showed two same shaped boxes of different colors (pink and white) to the child. The first research assistant put the candy in the pink box and left the room saying "*I will be right back.*" The child was then asked the following control questions: "*Where did (research assistant #1's name) put her candy?*" and "*Where is (research assistant #1's name)'s candy now?*" After the child had provided correct answers the second research assistant took the candy from the pink box and placed it in the white box. The first research assistant then returned to the room and the child was asked in two sentences with no pause in between: "*Where does (the experimenter #1's name) think the candy is?* and *Where will (the experimenter #1's name) go first to look for her candy?*"

2. Appearance reality task. Before the start of this experiment, the name of the child's friend was obtained. A sponge painted so that it looked like a rock was shown to the child. Then, the child was asked to identify the object. After identifying the object the child was allowed to hold and squeeze the sponge that looked like a rock. The experimenter asked the child to identify the object again. The word "sponge" was provided when the child was not familiar with this word. The experimenter then asked the child the following two questions (#2) with no pause in between: "*What did you first think these were? Before you touched them, what did you think they were?*" Then, the last question (#3) was asked: "*if your friend, (name of the friend) came here right now, what would he or she think these are?*"

3. Unexpected contents task. The experimenter showed a band-aid box to the child and asked what was inside the box. After the child had responded the experimenter opened the box. Instead of band aids, the box contained several short pencils. Then, the following questions (#4) were asked with no pause: "*What did you first think was inside? Before I opened this box, what did*

you think was inside?" After the answer, the final question with regards to this task was asked (#5): "*What would your friend, (name of the friend), who hasn't looked inside, think is in the box?*"

4. Misleading picture task. A book used by Astington and her colleagues (e.g., Astington & Jenkins, 1995; Gopnik & Astington, 1988; Jenkins & Astington, 1996) with a series of drawings was utilized for this task. The first page revealed a partial drawing that looked like a dog's ears. The experimenter asked the child to identify the drawing. After the child had answered, the experimenter turned the page to reveal the whole drawing, which was a drawing of a whole dog. Then, the child was shown another partial drawing that looked like a rabbit's ears. The question regarding identifying the drawing was repeated. Then, after the child had answered, the next page was turned to show the whole drawing of a rabbit. Next, a drawing that looked like a cat's ears was shown to the child and the question regarding identifying the drawing was repeated. When the final page was turned over the child saw that this time the drawing was of petals of a flower and not a picture of a cat. After this surprising result, the child was asked: (Q#6) "*What did you first think this was?*" and (Q#7) "*What would your friend, (name of the friend), who saw only this picture think it is?*" (Lundy, 2002).

For all of the above tasks, children's responses were transcribed verbatim.

UNICEF donation task. Grunberg et al.'s (1985) UNICEF donation task was adapted for the purposes of this study. The modified version of UNICEF donation task is as follows:

First, the experimenter told the child: "*Now you get 10 pennies for playing with me*." Then, experimenter counted out loud 10 pennies and placed them on the table and said "*these are all yours, you can keep the money for yourself or give some or all of it to UNICEF. Oh, by the way, do you know what UNICEF is*?" Regardless of the reply, the experimenter continued by saying, "*UNICEF is for children like you but who are poor and need money for food and clothing. We are collecting money for UNICEF. If you want to give some of your pennies to these other children, just put them in the box in the hallway on your way out.*" These instructions were repeated until the experimenter was sure that each participant understood how the procedure worked. The experimenter tried her best to avoid communicating and expectations. After talking about UNICEF, the participants were told that they could leave. The UNICEF box which was placed in the hallway could neither be seen by the experimenter nor could the participant see the experimenter when passing by the hallway. The UNICEF box was partially filled with pennies but it was not possible for the participant to see exactly how many pennies were in it.

> In Grunberg et al.'s (1985) study, the exact wording for the UNICEF task is as follows: We're collecting for UNICEF. UNICEF is for kids like you but who are poor and need money for food and clothing. If you'd like to give some of your pennies to these other kids (Experimenter 3 starts to hand pennies to subject), just put them in the box in the kitchen on your way out (p.4).

In these statements, it sounds as though the child could only contribute some of the money. To eliminate this issue, we modified the wording and added a statement to be clear that the child

could keep the money, or give some or all of it to the children in need. When the experimenter was handing out the money she informed the child that he or she could keep the money or give some of it or all of it to the children in need.

The task that was employed in this current study was designed to assess material altruism and not compliance. The children were specifically told that they could either keep the pennies they received or give some or all of them to the poor children. The experimenter was aware that the children knew about money and that they knew they could use it to buy something. Because children were given choices to keep or donate the money and no expectations to donate the money were made, the tasks addressed altruism and not necessarily compliance.

Family context questionnaire. On the basis of the literature review, the authors listed some possible family context components that could potentially effect the development of theory of mind and/or altruism (i.e., Korchmaros & Kenny, 2001; McAlister & Peterson, 2006; Silpi & Nandita, 2004). In light of the literature review on theory of mind and altruism, a questionnaire was developed. The questionnaire included such items as: the child's date of birth, birth order, number of siblings, income level, parents' education level, family type, and number of languages spoken at home.

Results

First, descriptive statistics including means and standard deviations for theory of mind and material altruism by gender and age were calculated. These descriptive statistics are reported in Table 1 and Table 3.

Table 1
Means and standard deviations for theory of mind total score and material altruism by gender

		Theory of mind		Material altruism	
Gender	*n*	*M*	*SD*	*M*	*SD*
Female	16	5.31	1.815	2.17	4.060
Male	25	5.04	2.300	2.08	3.752
Total	41	5.15	2.104	2.12	3.825

The descriptive statistics show that the scores received by girls for the theory of mind tasks (M = 5.31) were higher than the scores received by boys (M = 5.04). A *t*-test was conducted to determine whether the differences in the means were statistically significant. The results of the t-test indicate the difference in the scores were not statistically significant, as shown in Table 2.

Table 2
Summary of t-test results for theory of mind by gender

	n	*F*	*T*	*df*	*p*- value	Mean difference
Theory of mind	47	.213	-.400	39	.691	-.273

Table 3
Means and standard deviations for theory of mind total score and material altruism by age

		Theory of mind		Material altruism	
Age	*n*	*M*	*SD*	*M*	*SD*
3	4	4.00	1.414	.00	.000
4	22	4.77	2.468	2.36	4.260
5	15	6.00	1.309	2.32	3.627
Total	41	5.15	2.104	2.12	3.825

The descriptive statistics also show that 5-year-olds' theory of mind scores (M = 6) were higher than those obtained by 3-year-olds' (M = 4) and 4-year-olds' (M = 4.77). Similarly, the older children had higher scores on the measure of material altruism. An Analysis of Variance (ANOVA) was conducted to determine whether the differences in the means were statistically significant. There were no significant differences in the means of the theory of mind scores across the three age groups.

The Pearson Product Moment correlation coefficient was computed for the children's theory of mind ability, material altruism, and family context. The results of the correlational analyses are presented in Tables 5-6.

Table 4
Intercorrelations between theory of mind, material altruism and age

	1	2	3
1. Age	—	.370*	.098
2. Theory of mind		—	.082
3. Material altruism			—

Note. * Correlation is significant at the 0.05 level (2-tailed).

Table 5
Intercorrelations between theory of mind, material altruism and sex

	1	2	3
1. Sex	—	.064	.012
2. Theory of mind		—	.082
3. Material altruism			—

Table 6
Intercorrelations between the measures of family context, theory of mind and material altruism

	Theory of mind	Material altruism
Birth order	-.010	.152
Number of sibling	-.001	.408**
Mother's education	-.220	.035
Father's education	-.040	.100
Income	-.064	.171

Other languages spoken at home	-.078	.118

Note. ** Correlation is significant at the 0.01 level (2-tailed).

The results reported in Table 4 show that there was a significant correlation between theory of mind and age (r=.37). On the other hand of there were no statistically significant relationships between theory of mind and material altruism (r=.082), and altruism and sex (r=.012). The relationship between material altruism and number of siblings was judged significant (r =. 408, P<.001).

Discussion

Based on our findings, we propose (in parallel to Symons, 2004) that understanding others and his or her own mental states does not lead to or elicit social behavior (in this case altruistic behavior). Having the ability and using the ability to execute positive behavior are two different things. It is likely that while having advanced mindreading ability could improve the altruism level of an individual, it could also have a negative effect (or no effect) on the level of altruism. This is because knowing more about others could lead to the exploitation of others, or ignoring the feelings and thoughts of others.

It seems therefore that the question is not whether the two are related. Instead, the two key questions are: 1. Under what conditions do children (*choose to*) use theory of mind ability to make moral judgments and perform moral behaviors? That is, under what condition will a child use his or her mindreading ability, as related to moral cognition, in either a positive or negative way? 2. Under what condition do they not use theory of mind ability to make moral judgments and perform moral behaviors?

Having an ability and using it do not operate on an "always or never" basis. It is possible that individuals occasionally use theory of mind ability, and when they do they can use it in either a positive or negative way. At the same time, individuals might not use theory of mind ability to make any moral judgments. Arguably, it is possible that altruistic behaviors are related to social skills more so than they are to theory of mind ability. After all, even animals that have no theory of mind ability can perform altruistic acts.

According to our findings the four and five year old children had higher scores on the measure of altruism. This finding is not surprising given that younger children have a tendency to be more egocentric than older children.

One goal of this study was to examine the relationship between theory of mind and material altruism, along with family context. Surprisingly, however, no relationship was found between theory of mind and any family context variables. There was, however, a moderate correlation between material altruism and the number of siblings. One explanation for this finding is that having more siblings may provide more opportunities for a child to be involved in altruistic behaviors. This being the case, then altruism could be a behavior that develops in the social

context, and is linked to social goals. Also, since moral behaviors develop in the social context, and having more siblings may provide a better foundation for altruistic behaviors.
The findings of this study present an implication for educational practice. This study informs early childhood educators that altruistic behaviors do not seem more likely to be performed on a knowledge base (see Korchmaros & Kenny 2001). If we want children to care for other children who are less fortunate, providing information about disadvantaged children alone may not be enough. Educators should go beyond this knowledge base and reach for the emotional base by providing activities to build an emotional connectedness among children through activities (i.e., watching relevant videos, engaging in role play, having children from different SES spend time together).

Clearly, there is a need for more research to shed light on the complex nature of these abilities. It is recommended that future research focus on examining the nature of the circumstances when children use or do not use their theory of mind ability to make moral judgments.

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