

Theory of Mind in Relation to Moral Evaluation of Intentional and Accidental Harm Behaviour

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Theory of mind and moral reasoning are two distinct yet related domains under the realm of social cognition that have consequences for the social functioning of individuals. The aim of this study was to examine the developmental progression of both theory of mind and moral reasoning in early childhood and to examine the effect of the development of the theory of mind on the moral reasoning of young children. Theory of mind & moral reasoning tasks exclusively designed for the present study were administered on ninety 3-year-old, 4-year-old & 5-year-old-children. Results of one-way ANOVA revealed a significant development of both theory of mind and moral reasoning abilities between 3 to 5 years of age. Also, the t-test of significance for two independent groups revealed that children who had developed theory of mind skills performed significantly better on moral reasoning tasks as compared to children who had not developed a theory of mind. Further, the analysis of responses given to the moral reasoning tasks revealed that the children with a developed theory of mind gave more intention-based responses in contrast to children who had not developed a theory of mind and made consequence-based responses. The study has implications for understanding the crossroads between the theory of mind and moral reasoning abilities, which are possibly linked by virtue of intentionality as a common underlying construct.

Keywords: theory of mind, moral reasoning, social cognition

Early childhood is a developmental stage during which different socio-cognitive abilities begin to burgeon tremendously, as children become more adept at comprehending the mental states of themselves and other individuals. The social cognitive ability known to facilitate this process is referred to as the Theory of Mind (ToM). It is the capacity to infer the beliefs, desires, or intentions of oneself and others (Baron-Cohen, Leslie, & Frith, 1985). The development of the Theory of mind ability allows us to attend to people's mental states and thereby facilitate the maintenance of fulfilling social relationships with other individuals (Beaudoin, 2020). Theory of mind has remained a focus of research in the field of developmental as well as social psychology ever since the concept was first introduced and defined by Premack and Woodruff (1978). A corpus of literature has focused on the development of the theory of mind as well as its correlates and antecedents (Weimer et al, 2021). In recent years, there has also been a shift towards developing advanced

measures for the theory of mind (e.g., Devine and Hughes, 2013; Hayward and Homer, 2017; Rice and Redcay, 2015).

The development of the theory of mind is deemed critical to understanding the behavior of oneself and others. Particularly, the intent behind a behavior, the understanding of which develops by the virtue of the theory of mind, becomes the most relevant focus (Berman, 1999; Cohen & Rozin, 2001). According to Baird and Astington (2005), a comprehensive understanding of intentionality is acquired gradually and by around 3 years of age, children tend to have a sophisticated knowledge of the difference between intentional and unintentional behavior. By the end of the pre-school years, the children even begin to appreciate that there may be different intentions behind the same action.

Yet another social cognitive ability that appears to be particularly sensitive to the developmental stage in the lifespan is moral evaluation. Moral evaluation is a ubiquitous

part of our everyday social interactions and essentially requires the integration of different social-cognitive processes including ToM (Young et al 2007, Moran et al, 2011). Traditionally, morality has been conceptualized as either descriptively, i.e., the code of conduct prescribed by a society or by one's own self for their behavior; or normatively, i.e., the code of conduct that would be put forth by all rational persons under certain circumstances (Gert and Gert, 2016). These two approaches offer some definitional features of morality, although a universal and explicit definition of morality appears to have remained elusive since the beginning of the 20th century.

A wealth of studies, as well as a large amount of literature, exists on both 'theory of mind' and 'moral reasoning,' but the number of studies concerning the possible relations between the theory of mind and other developmental processes is still limited. Even though both theory of mind as well as moral development studies follow somewhat parallel paths, and in fact have the same objective, i.e., to determine or understand how children reason about intentions or beliefs, the only major difference is that while the studies in the field of moral development are directed towards the distinction between right and wrong decisions (stated explicitly), the studies in the field of theory of mind are more concerned with the 'ability' of an individual to differentiate between true and false, i.e., it is more implicit in nature (Astington, 2004).

An understanding of intention that emerges with the development of the theory of mind appears to be crucial for the appropriate evaluation of moral behavior (Jameson, 2022). Although early research by Piaget (1932) had demonstrated that it is not until 8 or 9 years of age that children begin to make moral judgments based on intention rather than outcomes, his work has later been criticized by various researchers that have identified methodological flaws in his research (e.g., Wimmer et al, 1984). It is now widely recognized that the children's understanding of intention develops much earlier than what was originally suggested by Piaget (Leslie et al, 2006), with research evidence indicating that even young children and infants place reliance on an agent's intention

while evaluating their actions (Nobes et al, 2009; Chernyak and Sobel, 2016; Woo et al, 2017). The development of the understanding of intentionality is said to have implications for children's moral behavior as it allows them to accurately evaluate the moral transgressions. Moreover, an appreciation of the intention behind the actions of individuals rather than focusing merely on the outcomes also facilitates social interactions. It is because mental state understanding can be used to discern the potential antisocial goals of peers (Hughes & Devine, 2015).

A review of the existing research indicates that the pre-schoolers tend to attend to the outcomes of an action rather than the intentions while making moral judgments, but at around 5-6 years of age, there appears to be a developmental shift, referred to as outcome-to-intent shift (Margoni and Surian, 2020), as children begin to place more emphasis on intention rather than the outcome of an action (Killen and Smetana, 2015). The connections between the theory of mind and moral reasoning are also evident in neuroanatomical studies that have found evidence for overlapping neural networks for the theory of mind and moral reasoning abilities (Bzdok et al, 2012; Patil et al, 2017).

As evident in the extant literature, moral judgments of an individual depend not only on the consequences of an action, but are also contingent upon the intent behind the action. Researchers argue that our moral judgments concerning the wrongness of behavior may primarily depend upon the mental state of the agent (Cushman, 2008). The present study thus aimed to further our understanding of the theory of mind and moral reasoning development, and the effect of the development of the theory of mind on the moral evaluation of intentional and accidental harm behavior during early childhood in the Indian population. As cultural conceptions of mind are said to shape intent vs outcome based moral judgments (McNamara et al, 2019), it would be interesting to study the phenomenon in Indian population, as most of the research in this domain has hitherto been done in the western countries. We hypothesized that there will be a developmental progression

of theory of mind and moral reasoning during early childhood. Further, we also hypothesized that the children with a developed theory of mind will perform better on moral reasoning tasks as compared to children who have not developed a theory of mind. Whilst morality can be defined either descriptively or normatively; for the present research, we operationalized morality in terms of the moral judgments made by the individuals for the actions deemed as transgressions (Gert and Gert, 2016).

Method

Sample

The sample size consisted of 90 school-going children in the age range of 3 to 5 years, residing in the urban regions of Delhi-NCR, India, and belonging to middle-class families. The sample was further divided into three age groups- 30 three-year-old (Mage- 3.62 years) children, 30 four-year-old (Mage- 4.56 years) children, and 30 five-year-old (Mage- 5.53 years) children, so as to trace the developmental pattern. The effort was also made to keep equal males and females in each of the group to avoid any gender bias. The three-year-old group had 16 males and 14 females whereas four and five-year old groups had equal number of male and female participants.

Measures

Theory of Mind Task- The theory of mind of the children was examined by using two versions of traditional false belief tasks- the unexpected transfer false belief tasks, and the unexpected contents false belief tasks. For the unexpected transfer false belief tasks, the adapted version of the Sally-Anne false belief task, originally developed by Baron-Cohen, Leslie, and Frith (1985) was used. In addition, the adapted version of the unexpected content false belief task originally created by Wimmer & Permer (1983) was used. The tasks have been described in Appendix A.

Moral Reasoning Task- In order to examine moral reasoning in children, the researcher composed culturally appropriate short stories that varied on the basis of positive versus negative intent and harmful versus harmless outcomes (Young et al, 2007; Young et al,

2011). There were two versions of each of the stories that tapped onto the intention of the protagonist behind the harmful action in the three domains- materialistic harm, physical harm, and emotional harm. In three of the stories, the harm was not intended but the consequences were severe. In the corresponding three stories, the harm was intended but the consequences were harmless. The participants were then asked which of the protagonists was naughtier and deserved punishment. The endorsement of strict punishment against harm-intended acts was indicative of intent focus and the endorsement of strict punishment for accidental harm was considered to be indicative of outcome or consequence focus. The characters in the stories were gender-matched to the participant with names changed accordingly. The English versions of the stories are attached in Appendix B.

Procedure

The data was collected from the children studying in the pre-schools of Delhi-NCR, India, which were contacted via existing community relationships and cold-calling. The children were approached individually by the researcher in their respective schools once the permission was granted by the institutions and informed consent was taken from the parents. During individual sessions, the researcher explained to each participant that she would narrate some stories to them and ask some questions. Both theory of mind and moral reasoning tasks were administered with the help of toys in random order. Further, it was ensured that each child had listened to the story carefully by asking memory questions. All 8 stories narrated by the researcher (two stories to test theory of mind, and six stories to judge moral reasoning) were followed by two main questions- the first question was the target question, having right or wrong answers, and the second question was for the explanation to yield reasoning-based responses from the participants. The narration of the stories was counter-balanced so as to avoid the order effects. The answers were scored dichotomously, i.e., there was a score of 1 for each right answer or a score of 0 for the wrong answer. Prior to the target questions, a memory question was also asked to the participants based on the stories, as a measure of comprehension check so as to

ensure that they understood the stories properly. The research was conducted in accordance with the APA ethical standards laid out for the treatment of the children in the psychological research.

Results

Development of Theory of Mind

The mean scores of 3-year-olds, 4-year-olds & 5-year-olds on ToM tasks were .900 (SD= 1.241), 2.600 (SD= 1.452) and 3.266 (SD= 1.112) respectively. The increasing mean across age groups on the theory of mind score suggests that there is a developmental pattern in the theory of mind scores, indicating that theory of mind tends to get better with age. The graph (fig. 1) also indicates that there is a developmental progression in the theory of mind scores with the age of the child.

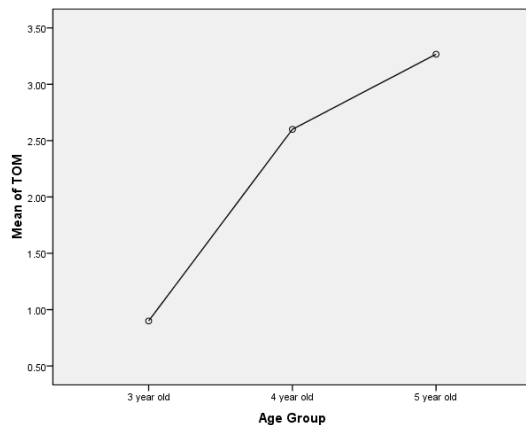


Fig. 1. Graph showing mean-scores of the theory of mind across age groups.

Further, One-way analysis of variance (ANOVA) revealed that the three age groups (3-year olds, 4-year olds and 5-year olds) differ significantly from each other on their theory of mind scores ($F(2, 87) = 27.418, p < .01$).

Finally, the Post-hoc comparisons were done to determine where the differences lie among the three age groups. Tukey's comparison shows that 3-year-olds differ significantly from both 4-year olds ($p = .000^{***}, CI = -2.48, -.91$) and 5-year olds ($p = .000^{***}, CI = -3.15, -1.58$) at .01 level of significance, in their theory of mind scores. However, 4-year-olds do not differ

significantly from 5-year old children ($p = .113, CI = -.11, 1.45$) in their ToM scores. The Least Significant Difference (LSD) comparisons also show that 3-year-olds differ significantly from both 4-year olds ($p = .000^{***}, CI = -2.35, -1.04$) and 5-year olds ($p = .000^{***}, CI = -3.02, -1.71$) at .01 level of significance, but 4-year olds do not differ significantly from 5-year olds in their ToM scores ($p = 0.46, CI = .01, 1.32$).

Development of Moral Reasoning

The means of the scores on moral reasoning tasks of 3-year olds, 4-year olds & 5-year olds were 1.6 (SD= 1.275), 3.133 (SD= 1.995) & 4.233 (SD= 1.524) respectively, indicating a developmental trend in moral reasoning across age. The graph (fig. 3) also indicates that there is a developmental progression in the moral reasoning scores with the age.

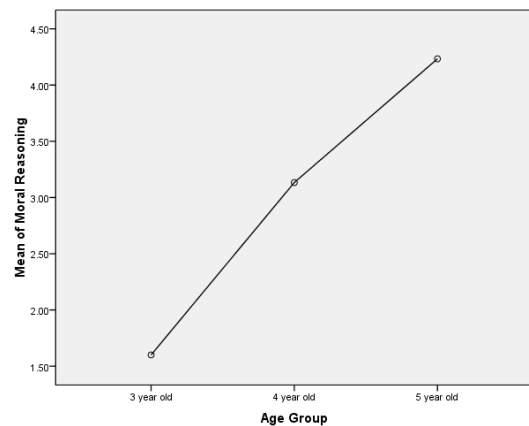


Fig. 2. Graph showing mean scores of moral reasoning across age groups.

Further, one-way analysis of variance-ANOVA revealed that the three age groups, i.e., 3-year olds, 4-year olds, and 5-year olds differ significantly from each other in their moral reasoning score ($F(2, 87) = 19.847, p < .01$).

Finally, Post-hoc comparisons were done to determine the specific differences across the three age groups. Tukey's comparison shows that 3-year old differ significantly from both 4-year olds ($p < .001, CI = -2.53, -.532$) and 5-year olds ($p < .001^{***}, CI = -3.63, -1.63$) in their moral reasoning at .01 level of significance, but 4-year olds do not differ significantly from 5-year old children in their moral reasoning scores ($p = .028,$

CI=-2.10, -.09). Also, LSD comparisons showed that all the three groups differ significantly from each other at .01 level of significance.

The role of Theory of Mind in Moral Reasoning

To determine the role of the development of the theory of mind on moral reasoning, the 4- & 5-year-old children were further divided into two separate categories on the basis of their theory of mind scores (children who have a developed ToM and children who have not developed a theory of mind) and their moral reasoning scores were compared. The 3-year-old children were not included in this analysis as none of the 3-year-old children was found to have passed the false-belief tasks. The mean moral reasoning score of children with a developed theory of mind is 4.78 (SD= 1.317) and of those who have not developed a theory of mind is 2.37 (SD=1.547). It suggests that children with developed theory of mind perform better at moral reasoning tasks.

Further, the t-test of significance revealed that the children with a developed theory of mind differ significantly from children who have not developed a theory of mind, in their moral reasoning scores ($t(58) = 6.537, p < .01$). Finally, the responses given by the children who had developed versus who had not developed a theory of mind were also analyzed and placed in either of the three categories- intention-based responses, consequence-based responses, and random responses. As shown in figure 3, more intention-based responses were given by children with developed ToM (69.69 per cent), compared to children who had not developed a ToM (10.74 per cent). Moreover, children with a developed theory of mind gave less consequence-based responses (19.19 per cent) as compared to children who had not developed a theory of mind. Finally, the children who had a developed theory of mind were also less like to give random responses (11.11 per cent) compared to children who have not developed a theory of mind (43.20 per cent).

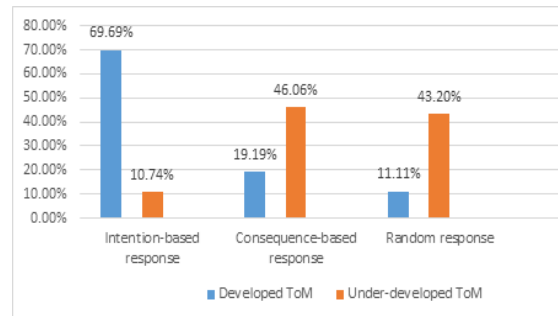


Fig. 3 Responses given by the children with developed and not developed ToM to moral reasoning tasks (in %).

Discussion

Theory of mind and moral reasoning are two important abilities in social cognition that facilitate social interactions and communication. The present study aimed at understanding the developmental pattern of the theory of mind and moral reasoning, and the relationship between the two during early childhood, for which ToM and moral reasoning tasks were administered on 3-year old, 4-year old, and 5-year-old children. The scores of the three age groups indicate that there is a developmental progression in the theory of mind and moral reasoning abilities, and that there is influence of theory of mind development on moral reasoning of the children.

The one-way analysis of variance- ANOVA revealed that the three age groups (3-year olds, 4-year olds and 5-year olds) differ significantly from each other in their theory of mind scores. Tukey’s comparison shows that 3-year old differ significantly from both 4-year olds and 5-year olds. However, 4-year olds do not differ significantly from 5-year old children in their theory of mind scores. It could be because different aspects of the theory of mind continue to develop across childhood. At three years of age, children’s awareness of others’ mental states begins to develop (Wellman, 1990). They begin to learn about emotions, intentions as well as contingency, all of which are precursors to false belief understanding. However, 3 year olds are yet to develop false belief understanding. As the research with three-year-old focuses on what they cannot do, research with four years old begin to focus upon what they can do. At around 4 years of age, children cross the

threshold and begin to pass the theory of mind tasks (Wimmer & Perner, 1983), but are still unskilled at understanding deception. However, research with children above 4 years of age has stated that they gain an even more complex understanding of false beliefs as they turn five (Freire, Eskritt & Lee, 2004).

The one-way analysis of variance of moral reasoning scores revealed that the three age groups also differ significantly from each other in their moral reasoning scores. Tukey's comparison for moral reasoning showed that 3-year olds differ significantly from both 4-year olds and 5-year olds in their moral reasoning at .01 level of significance. However, 4-year olds do not differ significantly from 5-year old children in their moral reasoning scores. The age of 3-7 years brings one of the major turning points in moral development when many children start to show moral-based behavior. At this stage, children's moral behavior develops in conjunction with other emotional and cognitive advances (Malti and Ongley, 2014), and is influenced by their daily experiences and interactions as well. Discussions between parents & children about the nature of the act and its consequences also pave the way for the understanding of fairness, rightness, or wrongness in children (Dunn, 2014).

Again, since moral development is the combination of experiences in the environment, as well as the physical, cognitive, social, and emotional skills a child learns as he grows, the moral behaviour of children tends to get better with age as they become more cognitively and emotionally advanced and gain more experiences in their environment. Children also learn about the basic understanding of rightness or wrongness, and the concept of punishment through their encounters with their peers (Yu, Siegel, Clithero, and Crockett, 2021) and teachers in school (Weinstock et al, 2009). Since it is usually after 3 years that children enter school, the morality or the moral judgment of children also becomes more complex after 3 years of age.

Finally, the t-test of significance comparing the children with developed or not developed theory of mind revealed that the children with a

developed theory of mind differ significantly from children who have not developed theory of mind in their moral reasoning scores (** $p < 0.001$). The analysis of responses given by the children with a developed and under-developed theory of mind to moral reasoning also indicates that theory of mind development undeniably leads to better moral judgments in children, as children move from giving consequence-based responses to intention-based responses, which has been stated by various researchers as well. In a study by Killen et. al. (2011), children between 3.5 to 7.5 years were asked to make attributions about an 'accidental transgressor'. It was found that children who did not pass the theory of mind task were more likely to attribute negative remarks to an accidental transgressor when compared to children who passed the theory of mind task. Also, children who did not pass the false belief theory of mind task were more likely to view the punishment given to the 'accidental transgressor' as more acceptable, in comparison to those children who passed the false belief ToM task. The children who passed the ToM task did not attribute the negative remarks to the accidental transgressor and were also less likely to view the punishment given to him as acceptable. Gvozdic et al (2016) also found that children between the ages of 5 to 8 years are sensitive to the intentions of agents. However, they also asserted that children are yet not fully capable of giving a 'mature' moral judgment, which is not due to their failure to take the mental state of the protagonist but because of difficulty in incorporating their innocent intention (Cushman et al, 2013).

Indeed, the central way that the theory of mind is linked with morality is due to the understanding of intentionality as an underlying construct, which establishes the linkage between morality and theory of mind. In order to interpret a person's behavior as right or wrong, we need to understand whether it was performed by them intentionally or unintentionally. It is because morality involves understanding that an act is right or wrong based on one's intentions, not solely the 'objective' consequences. Again, in order to make assumptions about the intentionality of a person, one needs to understand their mental state, which renders the development of the

theory of mind an important pre-requisite for making moral judgments. We can therefore say that people's theory of mind understanding actually serves as an input to make moral judgments about others. The data from various studies is also suggestive of the relevance of understanding false beliefs for morality (Killen et al, 2011; Wang et al, 2011).

Succinctly put, the present study revealed several findings about the theory of mind development and moral development, as well as about the intersection of these two domains of social cognition. Studying the developmental pattern helped us to know what kind of behavior may be expected out of children of a particular age. Moreover, scant research is done in eastern societies examining the influence of the theory of mind and moral reasoning on each other, where the results may differ, given the well-investigated contextual and cultural influences on both theory of mind (Frank and Temple, 2009; Pava, 2019) and moral judgment (Arutyunova et al, 2016; Andrejević et al, 2020). Furthermore, it also added to our knowledge of how the two domains pertain to intentionality as their basic foundation. The study also has implications for social institutions where both moral development and theory of mind development take place through children's early interaction with others and by exposing the children to the experiences of other individuals. Further, as the educational environment also influences the development of the theory of mind (Smogorzewska et al, 2020), the study has implications for designing more inclusive classrooms that facilitate enhanced ToM and moral development.

The present study, however, had a few limitations that future research can reckon with while attempting to uncover the links between theory of mind and morality. First, the information related to the target behavior to be assessed can be presented visually, as it can provide perceptual cues to the children regarding the intention underlying an action (Hilton and Kulhmeier, 2019), thereby reducing the task demands. Second, the study only throws light upon how children with a developed or undeveloped theory of mind differ in their moral reasoning scores. A more detailed and in-depth study is required to comprehend

the nuances of how the two domains interact with each other. Finally, we examined moral transgressions in only three domains, namely, physical harm, emotional harm, and materialistic harm. Children's understanding of morality also includes several other aspects, such as their understanding of morality in terms of resource allocation or social exclusion, which can be explored in future research.

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Appendix- A

Theory of Mind Task

Unexpected Content False Belief Task- “Alia was a small 4-year-old girl who used to go to a play school. Alia’s best friend was Leena. Every day she would find Leena waiting for her in the toy room where they used to play in the morning. One day there was a medical check-up going on in the school where a doctor came to see the children. Every child including Leena was called in the medical room. Alia was late for the day. As usual, when she arrived, she thought of playing with her best friend, and went on searching for her.”

The story was followed by the following questions:

Where would Anil/Alia go and search for his/her friend?

Why do you think s/he would search for her there?

Unexpected Transfer False Belief Task- In this task, the researcher presented the children with a closed box of crayons, who were asked about what they think is inside the box. The obvious answer is crayons. However, the box was filled with candles which was then shown to the children. The box was then closed again and the child was told that the box would be given to his/her friend now. The researcher said that the friend had not looked inside the box and asked two questions:

What would your friend think is inside the crayon box?

Why do you think so?

Appendix-B

Moral Reasoning Stories

1) Materialistic Harm

A) There was a boy/girl, named Ram/Reema, who was very angry with his father for some reason. In agony, he threw a cup on the floor which eventually broke.

B) There was another boy/girl named Aman/Amna, who was helping his mother in the kitchen. He was passing the tea-cup set to his mother but accidentally dropped them on the floor,

due to which all the six cups broke.

The stories were followed by the following two questions:

Which of the two children is naughtier and deserves stricter punishment?

Why do you think so?

2) Physical Harm

A) There was a boy/girl named Sahil/Seema, who was playing with her ball in the park. While playing, his/her ball accidentally hit another child who was also playing in the park. The child got severely injured.

B) There was another boy/girl named Aryan/Arti, who wanted to take revenge on one of his classmate, Karan/Kiran. So, he/she threw a ball to injure Karan/Kiran, but luckily he/she was saved. The stories were followed by the following two questions:

Which of the two children is naughtier and deserves stricter punishment?

Why do you think so?

3) Emotional Harm

A) There was a child, named Raj/Ria, who found a candy under his desk and ate it as he was hungry. Later on, he found that the candy belonged to Dev/Dia. When he confessed to Dev/Dia that he mistakenly ate his toffee, Dev/Dia started crying.

B) There was another boy/girl, named Sameer/Seema, who ate the lunch of Rohan/Reena thinking that she will remain hungry now. When Rohan/Reena discovered that her lunch had been eaten by someone, she became happy because she did not like what she had brought for lunch and had already eaten from the canteen. The stories were followed by the following two questions:

Which of the two children is naughtier and deserves stricter punishment?

Why do you think so?

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