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Parental Background, Parenting Practices, Sibling Birth Order and Children's Theory of Mind

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ABSTRACT

Parental background, parenting, and sibling birth order have been reported in many studies to be associated with children's Theory-of-Mind (ToM). However, these studies were not yet able to foresee the overall contribution of each factor related to children's social cognition, in this case, the theory of mind. This present study aimed to fill this gap by investigating which factors dominate the contribution to ToM: whether parent's education, occupation, parental attitudes (parenting), or siblingship factors. The participants in this study were 225 preschool children (ages 4–6 years) and their parents living in the urban Jakarta Metropolitan Area. Children participants were tested using the 5-step ToM Scale in their respective pre-schools by their native speaker (Bahasa Indonesia). The parents were asked to report their demographic data, children's family background, and parenting assessed by the Parenting Attitudes Inventory. Both research instruments have been tested for its reliability and consistency after being translated to Bahasa Indonesia. The statistical analysis indicated that all independent variables (i.e., parents' demographic background, parenting, and siblingship) 37,3% contributed on children theory-of-mind understanding. Mother education level is significant and the most affecting variable on children ToM. In contrast, while mother's occupation was negatively affecting children's ToM, having a younger sibling(s) has a beneficial effect on understanding ToM. Finally, this study does not find any relationship between children's ToM with numbers of family living in the house (family size), number of siblings, and children gender.

Introduction

Theory of mind (ToM) is children's ability to understand others mental state (i.e., desire, belief, feeling, knowledge). ToM ability is not given by birth; instead, it was developed and influenced by daily interactions between children and their surroundings. ToM starts developing on age 3-4; when children begin to understand two mental state concepts, which are desire and belief. As in this age children begin to understand that people may have different desire (e.g., "My sister likes vanilla ice cream, I love strawberry ice cream. My mother doesn't like ice cream; she loves coffee"). Children also know that desire not always fulfilled (e.g., "I can't eat ice cream because I got a cough"). They start to recognize that people behavior may depend on their desire ("My sister eats strawberry ice cream because she likes strawberry ice cream"). In a later development, young children then start to understand another mental state, i.e., beliefs. He/she begins to realize that people may

have different beliefs (for example, “I believe my sister ate my biscuits, but my mother believes that my brother who ate it”). They also realize that beliefs can be true or false (i.e., “in reality, my father ate those biscuits”).

Understanding others’ mental state plays an important role for children social cognition ability as this understanding facilitates children social interaction with their peers and surroundings. Research showed that children with better social cognition can manage their facial emotion and reaction during peer interactions which makes them more likely to be accepted by their peers (Hoghlund et al., 2007). Other researchers also indicated that ToM is positively related to peer relationships. Specifically, research conducted by Slaughter, Dennis, & Pritchard (2002) with children age 4 to 6 showed that understanding of false belief is related positively to children’s popularity. In addition, two longitudinal studies indicated that better ToM performance at age 4 - 5 predicted peer acceptance and friendliness at age seven (Caputi, Lecce, Pagnin, & Banerjee, 2012; Fink et al., 2015). Moreover, researches showed a negative effect of lacking social cognition (ToM). For example, a research conducted by Renouf et al. (2010) showed that poor performance on false belief in preschool children was highly related to peer victimization and aggression when they are ten years old. Bullying at adolescence was also to be related to a low score of ToM in preschool age. Adolescents with a low score of ToM in their preschool years are vulnerable to bullying because they cannot predict the intention of others who bully them (Shakoor et al., 2012).

Besides influences peer relation, ToM ability is highly related to children’s moral judgment. Moral judgment is essential for children to differentiate what they should or should not do as well as understanding its consequences. A study examined how children attribute themselves on moral valence, showed that children with better false belief also have better understanding that others intentions are different based on beneficial or harming consequences caused by those actions (Leslie, Knobe, & Cohen, 2006). Other research by Killen et al., (2012) who investigating morally-relevant theory-of-mind highlighted that false belief is highly influenced children understanding on others intention. This in turn related to a better understanding on moral values and judgment. Children with better false belief understanding also more flexible in judging adults action on breaking moral rules, where they understand that adults have their conviction on those actions (Smetana et al., 2012).

Finally, understanding other’s mental state also necessary for empathy; it was showed that empathy and ToM are closely related. Research on children empathy and ToM usually conducted on special need children (such as on ASD, early-onset schizophrenia, and ADHD). These research conclude that what caused the low score on ToM (or false belief) and empathy is the same biological / genetic reasons; it stated that brain part that functioning on ToM is same as for empathy. Recent research, using polygenic score and second-order ToM task, found that there is a genetic contribution in theory of mind development and empathy (Shamay-Tsoory, et.al., 2007; Benedetti et.al., 2009; Mathersul, McDonald, & Rushby, 2013; O’Nions et.al.. 2014; Warrier, et.al., 2017).

Several studies have summarized children understanding of mental state was influenced by parental backgrounds such as SES/father occupation, mother's education and occupation, sibling, and family size. Studies on the effect of SES and mental state understanding indicated that children from high SES (whose father have better education, well-paid job) performed better in false beliefs task compared to children from low SES background (Cutting & Dunn, 1999; Pears & Moses, 2003; Nathanson et al. 2013; Shahaeian, 2015). Further, children from the working-class family (indicated by parent

education level) have lower false beliefs understanding than middle-class family (Babu, 2013; Farhadian et al. 2010b). The recent study conducted in Indonesia was also indicated that children from low SES (trash picker children) developed mental state understanding behind their middle-class children counterpart (Kuntoro et al., 2013). These findings point out similar results; children with better SES (well-paid fathers) have better mental state understanding than low SES children.

Further, research indicated mother occupation was negatively related to children false belief (Cutting & Dunn, 1999; Hughes et al.,2005; Farhadian, 2010b). These studies suggested children's with working mother has lower false belief performance. This might result from insufficient mother-child quality time. This research is in line with recent article by Friedman (2018), published on Harvard Business Review, which highlighted the importance of mother-children quality and quantity of interaction. This article suggested children will have better development when their mothers are physically available. The compensation on better education and health qualities provided by working mothers cannot replace the time they spent with their children. On the other hand, mother's educational level was found to give a positive effect on children false belief understanding (see Jenkins & Astington, 1996). As educated mothers could provide better stimulation for their children and, it in turns; was influenced their children language ability and social understanding. In short, studies summarized that children from better SES (well-paid fathers and well-educated mothers) outperform in social cognition compare to children from low SES.

While research related to parents' background (SES, education, and occupation) related to ToM is convincingly robust, studies on the relationship between siblingship and ToM showed a more diverse result. For example, some studies indicated that sibling (particularly older sibling) positively associated with children capability to understand false beliefs task (Perner, et.al., 1998; Peterson, 2000; McAlister & Peterson, 2006; Jenkins & Astington, 1996; McAlister & Peterson, 2007; Farhadian, et al., 2010a;). These studies suggested that older siblings provide opportunity to arguing, quarreling, bickering, and conflicting to their younger sibling. Thus giving younger children chance to understand others have different beliefs, different point of views, and needs. In addition, having older sibling provide a chance to observe how his/her older sibling interacts with caregiver and friends. Children who have older sibling most likely to learn about deception and trickery from their sibling. Exposure to all of these can advance children theory of mind understanding compare to only children or children with only younger siblings.

On the other hand, studies conducted by Cole & Mitchel (2000) suggested having sibling does not influence children false beliefs. The different effect between these two studies might be related to participants' background. The participants of the study mentioned in the previous paragraph were children from middle SES. Meanwhile, the Cole & Mitchel's (2000) study was conducted in low SES children. For children from middle SES, having siblings is beneficial for the development of mental state understanding. In particular, having older sibling(s) provide the opportunity to learn that others could have different mental states. However, for children from low SES, having sibling do not influence mental state understanding since their general cognitive and language ability developed later and slower (due to low SES and lack of stimulation) and therefore also affect their social cognitive development.

Further, research conducted by Shahaeian (2015) with Iranian children from low and high SES level in the urban and rural area, also showed similar result. Her study did not find

relationship between number of siblings, as well as number of older sibling to children understanding of mental state. This result could be influenced by culture, where Iranian mothers are practically more conform to their parenting practices, so parents are more dominant in influencing children social cognition rather than sibling. Also, one of Asian family value (in this case Iranian) is keeping harmony within family, they saw arguing and conflict as negativity and avoid them.

Several studies have been conducted to investigate the relationship between parenting and children understanding of mental state. Pioneered by Vinden (2001), who conducted Anglo-American and Korean-American children in the USA. The study summarized Korean-American children raised by authoritarian parenting have more developed mental state understanding than their Anglo-American counterpart. In other words, authoritarian parenting has a positive association with ToM. Korean-American parents have higher expectation on their children achievement Therefore, they more demanding and applied authoritarian parenting; which not only influencing their children general cognitive ability (measured by academic achievement) but also impacted children' social cognition. In contrast, a study conducted by Villalobos, Padilla-Moora & Trias (2010) with Costa Rican children, indicated a different result. Villalobos, et al., (2010) found out that children from authoritative parents have better performance in false belief task compared to children from authoritarian parents. A further study conducted by O'Reilly and Peterson (2014) was also show a similar result. Those researchers argued that authoritative parenting provide an opportunity to argue and express their opinion that stimulated children mental state understanding. Our previous research also shows similar result despite it was conducted in Indonesia. Children of autonomy parents perform better in ToM task compare to children with more conformity parents (Kuntoro, et.al., 2017).

It can be concluded that researches suggested that family SES level (measured by father occupation), mother education and occupation were highly associated with children social cognition development. On the other hand, research about family background and siblingship on children social cognition development is not robust yet. This factor may be related to cultural context and SES level of the participants. While Indonesia is known as a collectivist country (Hofstede, 2015), which parents are usually praising on family harmony and conformity within society; our previous study showed that Indonesian parents are more encourage individuality and autonomy in their parenting practices (Kuntoro, et.al., 2017). This unique context will enrich our knowledge and understanding of contributing factor of children mental state understanding in a collectivist cultural context with autonomy/authoritative parenting. Besides, previous studies investigating the relationship between parent demographic backgrounds, parenting, and siblingship on children ToM were investigated separately as single variable (Farhadian, 2010a; 2010b). Also, studies that investigate the contribution of those variables simultaneously to children ToM is still scare, especially research conducted in Asian children. Therefore, we intended to fill the gap in the present literature regarding the parenship, parenting, and siblingship and aimed to answer two research questions; 1) Which factors (factors in parental backgrounds, parenting, and siblingship) are contributing on children Theory of Mind? 2) Which one of these factors that have the highest influence on children theory of mind performance?

Method

Participants

The participants of this study were 225 typically-developed children and their parents. They came from middle-class families recruited from various playgroups and kindergarten in urban Jakarta Metropolitan Area, Indonesia. The proportion of participants were 115 boys and 110 girls with range of age 48-81 months (M = 64,28; SD = 7.75). Parent's demographic backgrounds are as follow: most fathers were hold bachelor degree (42%) and high-school graduates (35%). Most of the mothers' education level was bachelor degree (44%) and high school graduates (30%). Father's occupation mostly managerial & technical level (51%), and professionals & high-rank officers (20%); while most of mothers are housewives (41%) and partly-skilled occupations (21%). Most mother are 30-35 years old (44%) and fathers are mostly 35-40 (38%). Majority (70%) of the children are live within their nuclear family, and the rest (30%) live within their extended family including grandparents, aunts, uncles, and cousins. With respect to siblingship, 42 children (19%) are only children, 114 of them (45%) have one sibling, 61 of them (35%) have two siblings, and three of them (2%) have four siblings. Most of the children (41,3%) are first born, the second born (40,9%) and third born (34%). Most of the children (41.3%) do not have older sibling, and 41.3% have one older sibling, while 14.7% have two siblings, and six children (5%) have three or more older siblings. There are 143 children (63.6%) have no younger sibling, 76 of them (34%) have one younger sibling, and 6 children (3%) have two or more younger siblings.

Design

This study employed a relationship study design on which predictor variables has the most effect on the outcome variables. The predictor variables are parentship (parent's education level, SES, family type, mother's occupation) and siblingship (number of sibling, number of older sibling, and number of younger sibling). Meanwhile, the outcome is children's theory of mind.

Procedures

We invited several general (non-religious affiliated or bilingual) playgroups and kindergartens located in Jakarta Metropolitan Area to be involved in this study. After the schools have agreed to participate, headmasters/teachers were requested to select children based on four criteria: 1) children age should range between 4 – 7 years old; 2) typically-developed children; 3) right-handed; and 4) they come from intact family (still have both of parents). The teachers specifically requested to exclude children who have significant problems/delays in cognitive, language and social development. Formal invitation letter and consent form then was sent to the parents of selected children. After the consent from parents were granted, a self-report questionnaire was distributed. The parents were requested to complete a questionnaire regarding their personal and family background as well as their parenting practice.

Children were interviewed and tested after formal consent from their parents were granted. Prior to individually meeting and testing session, the headmasters/teachers introduced experimenter to the children. The experimenter then sat-in in the classroom for two consecutive days to familiarize children with the experimenter. Children were tested in the quiet room at their respected kindergartens in the absence of teachers and parents. The children were tested in one single session with a duration of testing was approximately between 15 – 20 minutes.

Measures

This study employed three research instruments: 1) parents demographic and family background questionnaire, 2) Parenting Attitudes Inventory developed Vinden (2001) and

revised by O'Reilly and Peterson (2014); and 3) 5-steps Theory of Mind Scale introduced by Wellman and Liu (2004).

Parent demographic and family background questionnaire. Parents were requested to report their background including parental ages, education, and occupation), and family background (birth order, siblingship, number of people living at home/family size, and language used at home). Responses regarding education level were coded following the rule 1) Primary education, 2) Secondary Education 3) Diploma, 4) Bachelor, and 5) Post-graduate. Meanwhile, parents' occupation was classified based on Indonesian Classification of Occupations (2014). In this study, parent occupation was coded as follow: 1) unskilled; 2) partly skilled; 3) skilled; 4) managerial and technical; and 5) professional and high-rank officers (legislative/executive officers and commissioned armed forces officers).

Parenting Attitudes Inventory (PAI). We adapted and translated PAI (firstly introduced by Vinden, 2001) that had been revised by O'Reilly and Peterson (2014) into Bahasa Indonesia. The pilot study for adapting PAI (to adapt for Indonesian context) was conducted to 600 participants. The internal consistency in the pilot study was 0.75 and 0.78 for Conformity and Autonomy respectively. The Indonesian version of PAI consists of 12 items; six items for Conformity and six items for Autonomy. The parents are requested to answer the items by indicating their response in Likert-like continuum (1 to 5; 1 = Strongly Disagree; 5 = Strongly Agree). Statements such as "My child should be encouraged to express his/her opinion" and "I let my child ask me why I am telling him/her to do something" are examples of autonomy items. Meanwhile, statements such as "My children should do what they are told without questioning their parents (me)" and "My child should never tell I am wrong" were examples of conformity items. For this sample, Cronbach Alpha was calculated to establish the internal consistency. The result showed Cronbach Alpha of Conformity dimension was 0.80; and for Autonomy, dimension was 0.82. This result indicated that PAI is a reliable research instrument.

5-Steps Theory of Mind Scale. Theory of mind scale was administered to children were firstly developed by Wellman and Liu (2004). In this study all instruction, stimulus, and procedure are similar to the original version (see Wellman & Liu, 2004) and only two minor changes have been made (Band-Aid box was replaced with crayon box, and the garage was replaced by a fence). To ensure standardized procedure, each question in the 5-step ToM Scale was read from a prepared script. The Indonesian version of five-step ToM was also employed in previous studies (see Kuntoro et al., 2013; Kuntoro et al. 2017). In both studies, the CR coefficient was considerably high (0.92 and 0.98), indicated the scale is reliable and confirmed theoretically to sequence of ToM development. The scale consists of five subscales, assessed five different mental states: 1) desire; 2) beliefs; 3) knowledge, 4) false-beliefs, and 5) emotion (see Kuntoro et al., 2013; Kuntoro et al. 2017, for detailed of ToM tasks). Children response were scored either 0 (wrong) and 1 (correct) in each subscale - the total ToM score (ranging from 0 – 5) as calculated by summing up all the correct answer given by the child. We also analyzed Guttman Coefficient Reproducibility (CR) for this sample, and the result was 0.90; indicated the scale was reliable to measure theory-of-mind understanding.

Data Analysis

Data collected in this study was analyzed using SPSS 23 statistical program. Our main data analysis was conducted using regression analysis to establish the contribution of predictor variables to outcomes variable.

Results and Discussion

Linear regression analysis (using SPSS 23) were employed in order to identify all independent variables that have a significant contribution to children ToM. Then, only significant variables were analysis using stepwise regression. The analysis summarized five independent variables significantly related to dependent variable. These variables including mother education, autonomy dimension (on PAI), mother's occupation, number of younger siblings, and father's education level (See Table 1)

Table 1.
Stepwise Regression of every significant independent variable to dependent variable

Model		B	Beta	Sig.	R	R2	Δ. R2	SE
1	Mother's Education	.373	.347	0	.497	.147	.143	.977
2	Mother's Education	.363	.338	0	.578	.207	.199	.947
	Autonomy	.108	.25	.001				
3	Mother's Education	.400	.372	0	.677	.269	.257	.922
	Autonomy	.104	.237	.002				
	Mother's Occupation	-.258	-.226	.004				
4	Mother's Education	.386	.36	0	.799	.335	.320	.904
	Autonomy	.103	.232	.002				
	Mother's Occupation	-.257	-.225	.004				
	Younger Siblings	.304	.181	.030				
5	Mother's Education	.371	.345	0	.911	.391	.373	.891
	Autonomy	.096	.211	.008				
	Mother's Occupation	-.211	-.186	.034				
	Younger Siblings	.314	.186	.028				
	Father's Occupation	.116	.158	.048				

a. Dependent Variable: TOM Scale

Based on the stepwise regression analysis presented in Table 4, model #5 was the most fitted model. The final adjusted r-square for this model is 37.3. Meaning mother education, autonomy parenting, mother's occupation, number of younger siblings, and father's education level simultaneously contribute to 37.3% of children theory-of-mid. While 62,7% of ToM score is determined by variables do not included in this research. The stepwise analysis also indicated that the highest predictors to ToM are as follows mother's education, parenting (autonomy), mother's occupation, number of younger siblings, and father's occupation.

Further, our study did not find any relationship between family type and family size. Children rised in nuclear family ToM performance is as good as children raised in extended family. Therefore, our study also did not find any relationship between theory of mind and number of family living in the same roof. This finding is in line with result of study conducted in Iranian children with authoritarian parenting (Shahaeian, 2010) and contrast with research conducted by Perner, Ruffman, and Leekam (1994) where suggesting that children living in extended family has better false belief understanding compare to children living in nuclear family.

In contrast with previous researches conducted in WEIRD countries (Perner, et.al., 1998; Peterson, 2000; McAlister & Peterson, 2006; Jenkins & Astington, 1996; McAlister & Peterson, 2007 and Iran (Farhadian et al., 2010a) which is concluded children's ToM performance benefits from having older sibling(s). Our research shows different results. Having older siblings is not beneficial to children ToM performance. The finding of our study suggested that number of younger siblings (more is better) is beneficial to children ToM performance. This result might have related to Indonesian culture that obliges older children in the family to be more considerate to their younger siblings needs and feelings. When arguing over something, older sibling must comply their younger sibling needs first. Indonesian parents for example said to their oldest son/daughter "Just let it go, let your little brother will play first, it won't take long. You can play with it after she/he finished" or "You have to understand him/her, because she/he is still so young". Therefore, despite the same parenting attitudes and ToM sequences to children from WEIRD countries, the influence of sibling on children ToM development in Indonesia is different. Finally, it is important to conduct further study that investigate the mechanism of interaction among sibling in Indonesia.

Similarly, with other studies, our result shows that the father's occupation has a positive effect on ToM performance. Father's occupation commonly related to family income; the higher family income children could get better facilities such as toys, books, internet, and multimedia. They might afford internet and cable television which is nowadays more sourceful for early childhood education at home. This finding is constant across culture (USA, Australia, Iran, and Hong Kong). Also, we found no different ToM performance in boys and girls. This finding strengthens the previous research that there's no gender effect on ToM development (Bosacki, 2000; Walker, 2005; Kuntoro, 2013; Kuntoro, 2017).

Our study also strengthens the importance of mother's education on ToM development which also summarized in previous studies (see for example Cutting & Dunn, 1999; Hughes, et al.,2005 Farhadian, 2010b). We agree the higher the mother education was the better stimulation the children could get; and will improve children's cognitive development in general. Other possible explanation is that mother with higher education, can stimulate the children social cognitive development by communicating and opening discussion. As shown in previous research, mother with higher education usually more open-minded and has better communication style (Farhadian, 2010b).

Finally, this study found out mother's occupation has a negative influence on children's ToM. This might cause by the insufficient time working mothers spent on their children. Jakarta Metropolitan Area is the second biggest urban area after Tokyo-Yokohama, Japan. According to Forbes magazine, Jakarta Metropolitan Area with the area of 3.300 km2 and a population of 31.8 million. 1.35 million of workers are commuting from satellites cities around Jakarta (UN, 2014). They usually spend two to three hours commuting while spending another eight to nine hours in their office. These workers (including mothers) have to depart early (around 6 am) from home, and come home around 7 pm. It can be concluded that on during the weekdays, mother-children interaction is very short and limited aside from fatigue, work-related distress, overtime, etc (Kassamali & Rattani, 2014). Insufficient time to interact and stimulate the children; listen to their stories, and discuss ideas with them will hinder their children's social cognitive development. Another explanation with respect to parenting suggested that a mother with a higher level of occupation is less authoritative. Working mothers need to stick to their routine and rules strictly (Kassamali & Rattani, 2014);

it in turn might regard discussing and dialoguing to the children as unnecessary because they do not have enough energy and time. Therefore, they tend to apply less discussion and explanation in disciplining their children.

Conclusion

This study establishes that a child's familial environment (specifically parental demographics, parenting attitudes, and siblingship dynamics) plays a significant role in the development of their Theory-of-Mind (ToM). Based on the assessment of preschool-aged children in the urban Jakarta Metropolitan Area, these combined factors collectively account for 37.3% of the variance in children's ToM capabilities, highlighting the profound impact of the immediate family structure on early social cognition.

Among the variables examined, maternal education emerged as the most significant positive predictor of a child's ToM development, underscoring the vital role of a mother's educational background in fostering a child's understanding of others' mental states. Additionally, the presence of younger siblings was shown to positively influence ToM, suggesting that specific sibling interactions are beneficial for cognitive empathy. Conversely, a mother's occupation was found to negatively impact ToM development. The study also clarifies that several other factors—namely the child's gender, the total number of siblings, and the overall size of the household—do not significantly affect ToM. Ultimately, these findings emphasize that the quality of specific familial interactions and maternal characteristics are far more influential on a child's social-cognitive milestones than mere household size or structure.

Declarations

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