

## Maternal attitude and child interest in various play activities before and after mother-child play sessions

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### Abstract

**Background** Play stimulates children's growth and development. When mothers and their children play, a positive attitude from the mother and adequate interest from the child is required. Little is known about the play activities that effectively stimulate such positive maternal attitude and child interest.

**Objective** To assess for associations between various play activities with maternal attitude and child interest before and after mother-child play sessions.

**Methods** Pre-post intervention questionnaires were distributed to mothers before and after playing with their children. Children were aged 1-5 years, from two play sites (in Surabaya and Makassar), and included using purposive sampling. Eight types of toys/play activities were provided. The allocated time for answering the 17-question survey was 15 minutes. Average scores before and after the mother-child play sessions were analyzed using paired T-test.

**Results** We collected 264 valid questionnaires, 235 in Surabaya and 29 in Makassar. Improvement of maternal attitude after the mother-child play session was found in 132 mothers [mean diff. 0.07 (SD 0.42); 95%CI -0.117 to -0.015; P=0.011]. Play activities with significant improvements in maternal attitude were jigsaw puzzle [mean diff. 0.09 (SD 0.66); 95% CI 0.007 to 0.167; P= 0.033], Lego blocks [mean diff.-0.10 (SD 0.69); 95%CI -0.186 to -0.018; P=0.017], mini-gardening [mean diff. -0.15 (SD 0.75); 95%CI -0.238 to -0.057; P=0.002], sandbox [mean diff.-0.24 (SD 0.83); 95%CI -0.339 to -0.138; P < 0.001], fishing [mean diff. -0.17(SD 0.68); 95%CI -0.253 to -0.088; P < 0.001], and animal figurines [mean diff. -0.21(SD 0.75); 95%CI -0.3 to -0.117;P <0.001]. Improvement of child interest was found in 161 children [mean diff. 0.20 (SD 0.52); 95%CI -0.264 to -0.116; P<0.001]. Play activities with significant improvements in child interest were jigsaw puzzle, Lego blocks, origami, mini-gardening, fishing, and animal figurines.

**Conclusion** Some mother-child play activities, but not all, significantly improve both maternal attitude and child interest toward

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**Keywords:** attitude; children; interest; mother; playinghousehold contact

Children's growth and development are determined by the quality of the nutrition, stimulation, and family affection that they receive. Regular play stimulates the development of many important functions, such as visual and auditory function, cognitive and verbal skills, gross and fine motor skills, as well as problem-solving capability. Stimulation through regular play also develops children's personal interests, knowledge, cognition, creativity, and independence.<sup>1,2,3</sup> Children benefit from repetitious play as they have the opportunity to visualize, and

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consolidate methods and information.<sup>3</sup> Beneficial play requires family support, especially from mothers, who have an important role in motivating children to play. Maternal attitude towards mother-child play is related to maternal knowledge level and the children's response to a particular play activity.<sup>4,5</sup>

Playing with children is essential for both mother and child. Mothers provide children with necessary support and rewards. Children feel secure and comfortable because of maternal protection and guidance. This experience develops a child's confidence, courage, and creativity to utilize their playground.<sup>6</sup> Benefits of play are also found in mothers because they recognize their children's interest and capabilities, resulting in stronger emotional bonds. In turn, mothers can better select games or toys suitable for their children's interest and talents. This bonding improves the mother's ability to play with her child.<sup>5,6,7</sup> Other factors associated with maternal attitude, besides knowledge, include level of education, information resources, number of children, and socio-economic status.<sup>8,9</sup> Mothers who work as the sole breadwinner of the family may not give adequate affection to maximally support their children's growth and development.<sup>9</sup> A large number of children in the family also affects the distribution of affection and the play time for each child. In contrast, mothers with only one child probably have less experience in parenting.<sup>10</sup>

This study was done with the aim of assessing for associations between types of play activities and maternal attitude as well as child interest, through questionnaires filled by mothers before and after play sessions.

## Methods

This pre-and post-interventional study was conducted from August to October 2016 at two, purpose-built, play sites in Surabaya and Makassar. Subjects were recruited with purposive sampling. The inclusion criteria were mothers with children aged 1 to 5 years, both mothers and children were engaged in at least 6 out of 8 play activities provided at the play site, and were willing to fill the questionnaires. All participants were provided with written informed consent. Only mothers with normal pregnancies and birth histories

were included. Exclusion criteria were mothers who didn't fully complete the questionnaires or those whose children could not complete the play activity as expected.

Demographic characteristics were classified into several categories. Participants' monthly incomes were classified into 3 categories: <Rp 2,000,000; the national minimum wage of Rp 2,000,000 to Rp 5,000,000, and > Rp 5,000,000.<sup>11</sup> Their educational backgrounds were classified as low for junior high school graduates or below, middle for senior high school graduates, or high for post-high school/university educated and above. Other classifications were number of children in the family, employment status, and sole nurturer of children.

Indonesian language questionnaires used in this study were designed by our study team and validated at the Kiara Clinic, Department of Child Health, University of Indonesia Medical School/Cipto Mangunkusumo General Hospital, a teaching hospital. Questionnaires included demographic characteristics and questions regarding maternal attitude and child interest towards various types of play activities. The maternal attitude towards playing activities questions were scaled from 0 to 3, with 0 for "not essential," 1 for "less essential," 2 for "essential," and 3 for "very essential." For questions about child interest, 0 referred to "not interested," 1 for "less interested," 2 for "interested," and 3 for "very interested." The allocated time for filling the questionnaire was 15 minutes for 17 questions.

The play activities assessed in this study were (1) coloring, (2) jigsaw puzzle, (3) Lego blocks, (4) origami, (5) mini-gardening, (6) sandbox, (7) fishing, and (8) 3D animal figurines. The time allocation for each activity was 10-15 minutes. Questionnaires were collected and evaluated to obtain the mean scores of maternal attitude and child interest before and after the play session. For mean scores of each play activity, child interest score of 2.26 to 3 was considered good, 1.51-2.25 fair, 0.76-1.5 poor, and under 0.75 no interest. For mean scores of each play activity, maternal attitude score of 2.26 to 3 was considered to be good, 1.51-2.25 fair, 0.76-1.5 poor, and under 0.75 not favorable. Mean scores were then analyzed for significant changes by paired T-test using SPSS version 22.0 for Windows.

This study was approved by the Health Research Ethics Committee, University of Indonesia Medical School/Cipto Mangunkusumo General Hospital, Jakarta.

## Results

Four hundred fifty questionnaires were distributed, 350 in Surabaya and 100 in Makassar. Of these, 367 mother-child pairs were recruited (310 in Surabaya and 57 in Makassar). However, only 264 (71.9%) mothers completed the questionnaires as required, 235 from Surabaya and 29 from Makassar.

**Table 1.** Demographic characteristics of subjects

Characteristics	Criteria	Value
Maternal age, years	Range	20-54
	Mean (SD)	31 (4.59)
Educational background, n(%)	Low	14 (5.3)
	Middle	128 (48.5)
	High	122 (46.2)
Employment, n(%)	Stay-at-home mom	150 (56.8)
	Working mom	114 (43.2)
Family monthly income, n(%)	< Rp 2,000,000	59 (22.3)
	Rp 2,000,000 - Rp 5,000,000	165 (62.5)
	> Rp 5,000,000	40 (15.2)
Nurturing child by herself, n(%)	Yes	199 (75.4)
	No	65 (24.6)
Number of children, n(%)	1	169 (64)
	2	73 (27.7)
	3 or more	22 (8.3)

The mean maternal age was 31 (SD 4.59) years, ranging from 20 to 54 years. Almost half of the subjects had high educational background (122; 46.2%), while 128 subjects (48.5%) had middle, and 14 subjects (5.3%) had low educational background. The majority (56.8%) were stay-at-home mothers. Most subjects had a household income above the national minimum wage (77%) and most nurtured their children by themselves (75.4%). In addition, most mothers had only 1 child (64%) (Table 1).

In both Surabaya and Makassar, television is the predominant source of information, with 43% and 58% respectively, and an overall 44.7% of subjects. In contrast with subjects from Surabaya, subjects from Makassar barely relied on information from doctors/midwives/nurses. Information sources were understood by most mothers (85.2%), with only 37 mothers (14.8%) admitting to not understanding their sources of information in the questionnaire (Table 2).

Child interest in the play activities was scored in pre- and post-intervention questionnaires completed by mothers according to their observations before and after the play sessions. As shown in Table 3, according to maternal observations before the play sessions, children had only a 'fair' level of interest towards provided activities. The overall mean general score for children interest before playing session in the provided activities was 1.96 (SD 0.53). After playing session the mean general score was increased to 2.16 (SD 0.58), however this score was still considered 'fair'.

**Table 2.** Distribution of information sources on the importance of playing with children

Sources of information	Site			Understanding	
	Surabaya (n=235)	Makassar (n=29)	Total (N=264)	Understood (n=225)	Not understood (n=34)
Television, n(%)	101 (43.0)	17 (58.6)	118(44.7)	103 (45.8)	15 (44.1)
Magazine/newspaper, n (%)	5 (2.1)	2 (6.9)	7 (2.7)	7 (3.1)	0
Shopkeepers, n (%)	7 (3)	1 (3.4)	8 (3)	5 (2.2)	3 (8.8)
Mobile phone/social media, n (%)	64 (27.2)	3 (10.3)	67 (25.4)	57 (25.3)	10 (29.4)
Lecture/seminar, n (%)	10 (4.3)	2 (6.9)	12 (4.5)	10 (4.4)	2 (5.9)
Doctors, n (%)	7 (3.0)	0	7 (2.7)	5 (2.2)	2 (5.9)
Nurses/midwives, n (%)	5 (2.1)	0	5 (1.9)	5 (2.2)	0
Friends, n (%)	25 (10.6)	2 (6.9)	27 (10.2)	25 (11.1)	2 (5.9)
Others, n (%)	8 (3.4)	0	8 (3)	8 (3.6)	0
No source, n (%)	3 (1.3)	2 (6.9)	5 (1.9)	N/A	N/A

Six play activities had significantly improved mean child interest scores after the play sessions with such increase: (1) jigsaw puzzle [0.16 (SD 0.95)], (2) Lego blocks [0.21 (SD 1.03)], (3) origami [0.25 (SD 0.99)], (4) mini-gardening [0.37 (SD 1.13)], (5) fishing [0.29 (SD 0.96)], and (6) animal figurines [0.16 (SD 0.92)]. Overall, we found improved interest in 161 children (61%) with mean difference of 0.20 (SD 0.52); 95%CI -0.264 to -0.116; P<0.001]. This finding demonstrated that playing with children was beneficial in enhancing children to play, introducing new points during the games, and expanding children's interest toward various playing activities (Table 3).

In the questionnaire, maternal attitude questions were increased concomitantly with the child interest questions. The mean overall maternal attitude on the importance of play increased with mean difference of 0.07(SD 0.42); (95%CI -0.117 to -0.015; P<0.05). An improvement in maternal attitude was found in 132 (50%) mothers after the play sessions. This finding is shown in Table 4.

Significant improvements of mean maternal attitude scores were found in the following play activities with such increase: (1) jigsaw puzzles [0.09 (SD 0.66)], (2) Lego blocks [0.10 (SD 0.69)]; (3) mini-gardening [0.15 (SD 0.75)]; (4) sandbox [0.24

**Table 3.** Mean child interest scores for each activity before and after the mother-child play sessions, based on maternal observations

No	Rank the child's interest in	Mean score (SD)		Mean difference (SD)	95% CI	P value
		Before	After			
1	Coloring pictures	2.14 (0.89)	2.23 (0.83)	-0.09 (0.92)	-0.202 to 0.02	0.109
2	Jigsaw puzzles	2.02 (0.92)	2.18 (0.84)	-0.16 (0.95)	-0.274 to -0.44	0.007
3	Lego block	1.84 (1.03)	2.06 (0.91)	-0.21 (1.03)	-0.337 to -0.087	0.001
4	Origami	1.66 (0.94)	1.9 (0.96)	-0.25 (0.99)	-0.366 to -0.127	< 0.001
5	Mini-gardening	1.54 (1.02)	1.91 (0.98)	-0.37 (1.13)	-0.509 to -0.234	< 0.001
6	Sandbox	2.18 (0.95)	2.25 (0.95)	-0.07 (1.00)	-0.194 to 0.05	0.247
7	Fishing	2.24 (0.94)	2.53 (0.74)	-0.29 (0.96)	-0.408 to -0.176	< 0.001
8	Animal figurines	2.03 (1.00)	2.2 (0.94)	-0.16 (0.92)	-0.274 to -0.052	0.004
	General score for child interest	1.96 (0.53)	2.16 (0.58)	-0.20 (0.52)	-0.264 to -0.116	< 0.001

**Table 4.** Mean maternal attitude score for each play activity before and after the mother-child play sessions

No	Rank the child's interest in	Mean score (SD)		Mean difference (SD)	95% CI	P value
		Before	After			
1	Coloring pictures	2.48 (0.53)	2.44 (0.55)	0.04 (0.61)	-0.032 to 0.115	0.265
2	Jigsaw puzzles	2.33 (0.54)	2.43 (0.58)	0.09 (0.66)	0.007 to 0.167	0.033
3	Lego block	2.11 (0.66)	2.21 (0.68)	-0.10 (0.69)	-0.186 to -0.018	0.017
4	Origami	2.18 (0.61)	2.17 (0.67)	0.00 (0.73)	-0.084 to 0.092	0.933
5	Mini-gardening	2.05 (0.70)	2.19 (0.68)	-0.15 (0.75)	-0.238 to -0.057	0.002
6	Sandbox	1.81 (0.84)	2.05 (0.81)	-0.24 (0.83)	-0.339 to -0.138	< 0.001
7	Fishing	2.02 (0.73)	2.19 (0.67)	-0.17 (0.68)	-0.253 to -0.088	< 0.001
8	Animal figurines	1.87 (0.85)	2.08 (0.79)	-0.21 (0.75)	-0.300 to -0.117	< 0.001
9	Playing with your child	2.63 (0.47)	2.77 (0.58)	0.14 (0.68)	0.058 to 0.223	0.001
	General score for child interest	2.19 (0.41)	2.26 (0.47)	-0.07 (0.42)	-0.117 to -0.015	0.011

P value <0.05 indicates statistical significance

(SD 0.83)] (5) fishing [0.17 (SD 0.68)], and (6) animal figurines [0.21 (SD 0.75)]. Before mothers engaged in play sessions with their children, their attitude was low for those 6 play activities, but increased significantly after play, despite the score was still fair. This increase was also happened in their attitude on playing together with child (Table 4).

The overall score for maternal attitude towards the importance of play was good before the play session and increased after the play session [before: 2.19 (SD 0.41); after 2.26 (SD 0.47); 95%CI of mean difference -0.117 to -0.015; P 0.011]. This result was then analyzed using Spearman's analysis to see its correlation with prior knowledge and understanding level of the mothers with P value 0.021 and Spearman's correlation score 0.142 .

## Discussion

The parent-child bond can be strengthened by play. Play activities, mainly engaged in by mothers with their children, have a positive impact on optimal child growth and development.<sup>5-7,10</sup> Numerous types of play activities are beneficial. Mothers' observing their children playing can have a positive effect on their own attitude towards play, depending on the type of activity. Their experience of engaging in an activity changes their perception and attitude towards that activity. A prior study on breastfeeding mothers showed that maternal attitude towards breastfeeding changed positively after they breastfed their own children.<sup>12</sup> From our questionnaire-based study, we found that maternal attitude towards play changed positively after mothers played with their child by themselves (P<0.05). Maternal attitude was also affected by their prior understanding about the benefit of play, which shown in this study (Table 2). However, the correlation was very weak (Spearman's correlation 0.14). In contrast, a study also done in Indonesia about maternal attitude on breastmilk and complementary food for babies showed that prior maternal knowledge highly affected their attitude.<sup>13</sup> The influence of prior knowledge was also found in other studies about maternal attitude towards vaccines and vaccination.<sup>14</sup> Although, in general, maternal attitude scores improved, there were not significant changes for picture coloring and origami folding.

Origami has been shown to have positive behavioral and cognitive impacts on children, as they have a calmer and friendlier attitude after making origami, as well as better perception of mathematics.<sup>15,16</sup>

Despite the finding in maternal attitude towards origami, child interest in origami significantly increased from before to after the play session, based on maternal perceptions. Significant increases in child interest were also found in Lego blocks, jigsaw puzzles, mini-gardening, fishing, and animal figurines provided at the play site (P<0.05). Lego blocks, jigsaw puzzles, and origami are easy-to-implement, home-based activities that can be done by parents to introduce mathematical perception to their children in a fun, engaging manner. Doing these activities with their mothers, children may develop an early interest of mathematics, as well as other skills and knowledge.<sup>17</sup> A prior study in preschoolers, for instance, showed that puzzles improve spatial skills. Children who assembled puzzles with their parents had better spatial skills compared to those who did not. They also received more language input from their parents.<sup>18</sup>

Other activity that is beneficial for developing children's abilities is sandbox playing. Sandbox playing, mostly found in public playground, is an ideal place to develop imaginative skills, social and community skills, as well as spatial and cognitive skills. Children who met each other in the playground will interact and develop relationship between them. Mother would be helpful to assist children playing in the sandbox.<sup>19</sup> In this study, however, playing with children in the sandbox didn't show a significant change on children's interest. There was an increase of average score about 0.07 (SD 1) point, but this finding was not statistically significant (P>0.05, 95%CI of mean difference -0.194 to 0.05). Parent's involvement might be affecting, knowing that parents are the chief facilitator of play in their children.<sup>20</sup> Other factors that also affecting is the site where the study was held. Makassar and Surabaya are port cities which makes children might be familiar to playing sand on the beach. Different playing environment have an impact on children's play activities, therefore may be it is the reason the increase of average score in playing sandbox not so significant.<sup>21</sup>

Mother-child play activities had significant associations (P<0.05) with increased child interest, with the exception of picture coloring and playing in

the sandbox. Children's play activities also increased maternal attitude in a positive manner on the importance of playing with their children, especially engaging in activities such as Lego blocks, jigsaw puzzles, mini-gardening, sandbox, fishing, and animal figurines. Therefore, mothers should be encouraged to play more with their children, not limited to the play activities in this study, to gain benefits for both mothers and children.

A limitation of this study was the lack of an exact time limit for each play activity, such that the amount of time spent by each child may have differed. Further study needs to be done to assess what would constitute an adequate time for this observation. Other types of play activities may also be done in future studies to test and compare their benefits.

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### Conflict of Interest

None declared.

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