Do mothers with good theory of mind understand children's mind easily?

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Introduction

Mothers care their children and guess children's mind every day. How do mothers understand their children's mind? Many studies have assumed that theory of mind is used to understand other's mind (Gopnik & Astington, 1988; Mitchell, 1995; Perner et al., 1987; Wimmer & Perner, 1983). These studies suggest that mothers use theory of mind to understand their children's mind.

Is it easy for mothers to understand their children's mind? It can seem that it is easy for mothers to guess the feeling of their child, as mothers contact a child every day and child's mind is very simple. However, some studies report that it is difficult for adults to understand their children's mind (Keating & Heltzman, 1994; Lewis, Stranger, & Sullivan, 1989). These studies suggest that it is difficult even for mothers to guess their child's mind.

Is there any individual difference in mothers' understanding of their children's mind? Several studies proposed that there are individual differences in theory of mind (Keating & Heltzman, 1994; Kyo, 1997; Wellman, Cross & Watson, 2001). Kyo (1997) showed that the number of sibling influence ability of theory of mind. Wellman, Cross & Watson (2001) indicated that there is a culture difference in such ability. This implies that as for the Japanese children, acquisition of theory of mind ability is slow for one or two years. Keating & Heltzman (1994) showed that children with high leadership have elaborative theory of mind ability. These studies suggest that there is a difference in mother's theory of mind. It is assumed that a difference in mother's theory of mind is one of the most important factors for understanding children's mind. Therefore, it is expected that some mothers guess their child's mind easily, while another mothers do not guess their child's mind easily.

Some studies propose that mothers have child-rearing anxiety (Muto & Ando, 2008). Some study suggest that anxiety influence cognitive processing (Deffenbacher, 1991). It is assumed that mother's child-rearing anxiety influences their cognitive processing including theory of mind and interferes their understanding of their children's mind.

In this study, the effects of mother's theory of mind and child-rearing anxiety on understanding their children's mind were examined. It was anticipated that mothers with high ToM (theory of mind) understand their children's mind better than mothers with low ToM, as mothers with high ToM would understand their children's mind by elaborated theory of mind more exactly with insight than mothers with low ToM. It was also anticipated that mothers with low child-rearing anxiety understand their children's mind better than mothers with high child-rearing anxiety, as mothers with low child-rearing anxiety would have more space of information processing of theory of mind than mothers with high child-rearing anxiety.

Method

Participants: Seventy mothers participated in this research. They are protectors of the children who are into the kindergarten.

Design and Procedure: A 2 × 2 × 4 mixed design was employed, with between-participant factors of mother's ToM (high or low)and child-rearing anxiety (high or low), and within-participant factor of parts of children's face (eye, nose, mouth, and ear). The score of UCM (Understanding of Children's Mind) test was an independent variable, while the levels of ToM, child-rearing anxiety and part of face are dependent variables.

Mothers took three tests including UCM (Understanding of Children's Mind) test, ToM (Theory of mind) test and CAT (Child-rearing Anxiety) test. Mother filled in answers in each test.

In the UCM test, mothers were asked to grade according to four ranks (from 1 to 4) how mothers understand their child's mind from each part of face that are eye, nose, mouth, and ear when child lies to mother and other. There are five items including "Can you understand your child mind by looking at just child's eye" and so on.

In the ToM test, mothers were asked to grade according to four ranks (from 1 to 4) how they understand other's mind (Kikuno, 2013). The ToM test is a questionnaire test consisting of ten questions- "Can you lie, if you have to lie? Can you understand other's joke?" and so on. Table 1 shows items on the ToM test.

Table 1 Questions of ToM test

No.	Questions
(1)	It is difficult to suppose the feeling of the person from an action.
(2)	Even if a joke is said, it is incomprehensible.
(3)	I am not good at saying a joke.
(4)	Even if it is necessary to deceive it, I cannot deceive it well.
(5)	During a conversation, a story does not often engage with a partner.
(6)	It is said that I am good at ordering a person.
(7)	I can suppose the feeling of the partner just to look at the expression of the partner.
(8)	It is hard to read the other side of the feeling of the partner.
(9)	A feeling is reflected on an expression.
(10)	I may mishear the contents of the story.

In the CAT, mothers were asked to grade scale according to four ranks (from 1 to 4) how they have stress or anxiety on child rearing. The CAT is a questionnaire test consisting of ten questions- "Are you happy with a baby?", "Do you like child care?" and so on. Table2 is items of CAT.

Table 2 Questions of CAT (Child-rearing Anxiety Test)

No.	Questions
(1)	I want to be separated from child care.
(2)	I feel good when with a child.
(3)	It is pleasant to bring up a child.

(4) It may become hard that I bring up a child.

(5) I do not want to see the face of the child.

(6) It becomes the panic what I should do if a child cries.

(7) I afraid whether my child care is all right.

(8) A child is troublesome and is irritated.

(9) I cannot do anything by child care and get impatient.

(10) I do not have confidence as mother.

Results and Discussion

Figure 1 depicts the mean UMC scores as functions of mother’s ToM, child-rearing anxiety and their children’s parts of face. A three-way mixed ANOVA for mother’s ToM, mother’s child-rearing anxiety, and parts of children’s face. This revealed a significant main effect for parts of children’s face ($F(3, 198) = 80.20$, $p < .01$). Figure 2 shows the mean UMC score as a function of part of children’s face. Multiple comparisons by LSD revealed that to understand children’s mind mothers looked eye more than mouth, ear and nose (respectively, $ps < .05$), and they looked mouth more than ear and nose (respectively , $ps < .05$) significantly, although they did not look ear than nose significantly.

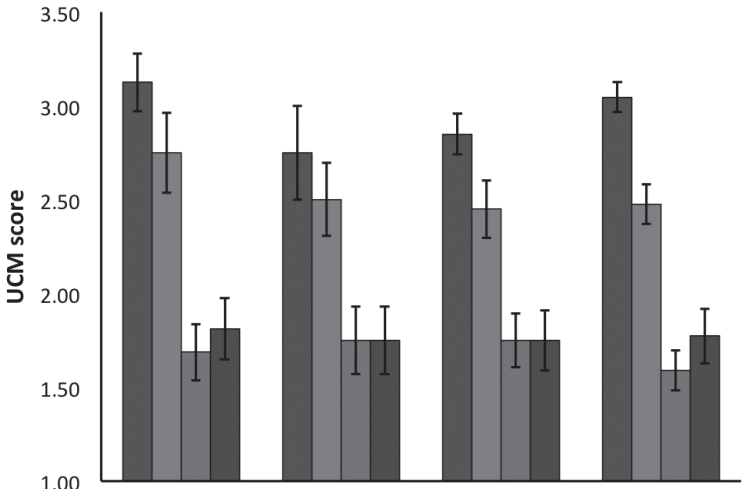

Figure1. The mean UMC scores as functions of mother’s ToM, child-rearing anxiety and their children’s parts of face

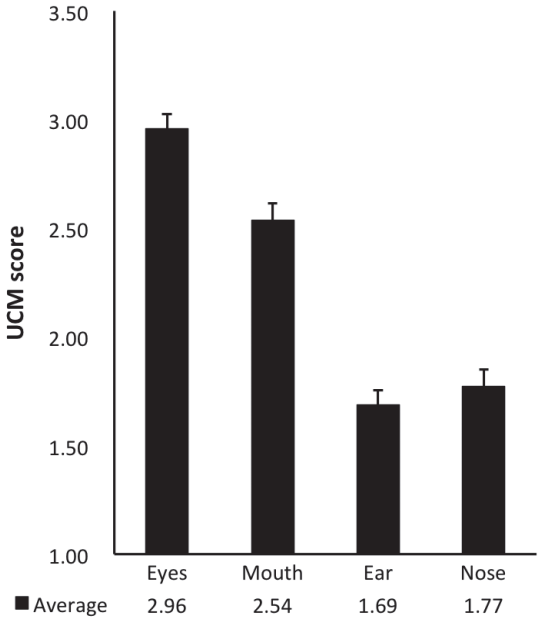

Figure2. The mean UMC score as a function of part of children's face.

The main effect of mother's ToM was not significant ($F < 1.00$). It indicated that mothers with high ToM did not understand their children's mind more than mothers with low ToM. The main effect of mother's child-rearing was also not significant ($F < 1.00$). It indicates that mothers with low child-rearing anxiety understand their children's mind more than mothers with high child-rearing anxiety. In addition, the interactions were not significant ($Fs < 1.00$).

The main effect for parts of children's face was significant. This result suggests that mothers would guess their children's mind based on the moving parts of children's face including eye and mouth rather than the non-moving parts ear and nose. It is assumed that moving parts have many cues to guess child's mind.

One purpose of this study was to determine if mothers with high ToM understand their children's mind more than mothers with low ToM do. The result did not support this assumption. Why does mother's ToM not influence to guess their child's mind? One possibility is that ToM test does not examine mother's theory of mind enough. Theory of mind would have more complicate structures. This ToM test can only measure general theory of mind. In order to understand child's mind, we have to specify the areas of theory of mind.

The other purpose of this study was to determine if mother with high child-rearing anxiety understand children's mind more than mother with low child-rearing anxiety. The result suggest that mother's child-rearing anxiety does not have effect on understanding of their children's mind. Why does mother's child-rearing anxiety influence to understand their child's mind. The offset effect may be one of main reason. It is easy for mother to understand their child's mind by low child-rearing anxiety due to mother's big cognitive space. On the other hand, mother with high child-rearing anxiety become nervous about their child and child-rearing. They become sensitive to child's mind so that they make great attention to the face of their child. By each factor, the effect of child-rearing anxiety on understanding of child's mind would be disappeared.

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Acknowledgments

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