

How do mothers understand their own children's mind from information of their face?

Haruo Kikuno and Yuichiro Kikuno

- I . Introduction
- II . Method
- III . Results and Discussion
- IV . Reference
- V . Acknowledgments
- VI . Summary

I . Introduction

Is it easy for mothers to understand their children's mind? It can seem that it is easy for mothers to guess their child's mind, as they take care their child every day and his/her mind seems to be very simple. However, several studies report that it is difficult for adults to understand children's mind (Keating & Heltzman, 1994; Lewis, Stranger, & Sullivan, 1989). These studies propose that it is difficult even for mothers to guess their child's mind.

How do mothers guess their child's mind? Kikuno (2012) examines how mothers guess their child's mind. The results indicate that mothers guess their child's mind based on information of his/her eyes and mouth more than ears and nose. Why do mothers use information of eyes and mouth more than ears and nose to guess their child's mind? It is assumed that information of child's eyes and mouth has a lot of information to guess their child's mind because eyes and mouth move more according to his/her condition of mind than ears and nose. Mothers can get a lot of cues from eyes and mouth to understand child's mind, as eyes and mouth reflect child's feeling and delicately changes more than ears and nose do.

Do all mothers use information of child's eyes and mouth more than ears and nose to guess their child's mind? This tendency would change as

functions of mother's child-rearing anxiety and children's temperament type.

The first purpose of this study is to examine whether mother's child-rearing anxiety influence how mother use information of parts of her child's face. Several studies suggest that anxiety influence cognitive processing (e.g., Deffenbacher, 1991). It is assumed that mother's child-rearing anxiety influences their cognitive processing of guessing their children's mind. Mothers with high child-rearing anxiety would have less cognitive resource for processing information to guess their child's mind than mothers with low child-rearing anxiety, as the former's cognitive load for child-rearing is bigger than the latter's one. Mothers with high child-rearing anxiety would pay attention to fewer parts of child's face than mothers with low child-rearing anxiety. Therefore, it is expected that mothers with high child-rearing anxiety guess their child's mind based on eyes and mouth selectively, although mothers with low child-rearing anxiety guess their child's mind based on eyes, mouth, ears and nose widely.

The second purpose of this study is to examine how children's temperament type influence mother's processing information of parts of her child's face. The following outcomes are expected. Mothers who have a child whom it is hard to bring up would have less cognitive resource for

processing information of guessing their child's mind than mothers who have a child whom it is easy to bring up, as the former's cognitive load based on child rearing is bigger than the latter.

In this study it was examined how mother guesses child's mind by processing information of parts of face of four types including "Standard type children" whose behavior is average, "Fearfulness type children" who fear for stranger and strange situation, "Sensitivity type children" who are sensitive to the taste food and "Rhythmicity type children" who empty the bowels and become hungry every several hours. Therefore, it is expected in this study that mothers who have a child whom it is hard to bring up (Fearfulness and Sensitivity type children) would guess their child's mind based on eyes and mouth more than ears and nose selectively, although mothers who have a child whom it is easy to bring up (Standard and Rhythmicity type children) would guess their child's mind based on eyes, mouth, ears and nose widely.

II. Method

Participants: Three hundred and seventy three mothers participated for this research. They have children who go to kindergarten or nursery school in Japan including Osaka, Nara and Shizuoka prefectures. The mean age of participants was 36.08 years old and the age range was from 26 to 46 years old.

Design: $2 \times 4 \times 4$ mixed design was employed, with between-participant factors of mother's child-rearing anxiety (high or low) and their children's temperament type (Standard, Anxiety, Sensitive and Periodicity), 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 child-rearing anxiety, children's temperament type and parts of children's face were dependent variables.

Materials and Procedure: Mothers took three tests including UCM (Understanding of Children's

Mind) test, CTI (Children's Temperament Inventory) test and CAT (Child-rearing Anxiety test).

In the UCM test (Kikuno, Kikuno & Li, 2014), mothers were asked to grade how mothers understand their child's mind from each part of face that are eye, nose, mouth, and ear when mother guess her child's mind from four rank scale (from 1 to 4). There are five items including "How do you understand your child's mind by looking at just child's eye," "How do you understand your child's mind by looking at just mouth" and so on.

In the Japanese version of TTS test, mothers were asked to grade how their child's behavior is in baby age (Sugawara, Shima, Toda, Sato, & Kitamura, 1994) from four rank scale (from 1 to 4). The TTS test was a questionnaire with 10 questions.

In the CAT, mothers were asked to grade scale how they have stress or anxiety on child rearing from four rank scale (from 1 to 4). The CAT was a questionnaire including 10 questions "Are you happy with a baby?", "Do you like child care?" and so on.

III. Results and Discussion

Questionnaire that mother did not answer completely was excluded for the analysis. Type of children were sorted on four types based on TTS test. Number of mothers who have Standard, Fearfulness, Sensitivity and Rhythmicity type child was 119, 24, 62, and 25 respectively. Eventually, two hundred and thirty mothers' questionnaire was used.

Table 1 indicates the mean UMC scores as functions of children's temperament type, child-rearing anxiety and their children's parts of face. A three-way mixed ANOVA for children's temperament type, mother's child-rearing anxiety, and parts of children's face was performed. The analysis revealed a significant main effect for children's temperament type ($F(3, 222) = 6.10, p < .01$) which indicates that mother with Standard type children graded as cues of child's mind more

Table 1
The mean UMC scores as functions of children's temperament type, child-rearing anxiety and their children's parts of face

	Children's Type			
	Standard	Fearfulness	Sensitive	Periodicity
Low child-rearing anxiety				
Eyes	1.98 (0.56)	2.29 (0.70)	1.96 (0.64)	2.69 (0.61)
Mouth	2.31 (0.67)	2.71 (0.45)	2.59 (0.83)	2.92 (0.47)
Ear	3.29 (0.55)	4.00 (0.00)	3.56 (0.57)	3.38 (0.49)
Nose	3.12 (0.63)	3.86 (0.35)	3.44 (0.57)	3.23 (0.58)
High child-rearing anxiety				
Eyes	2.32 (0.73)	2.35 (0.59)	2.26 (0.44)	2.42 (0.64)
Mouth	2.71 (0.74)	2.94 (0.54)	2.53 (0.49)	2.75 (0.43)
Ear	3.34 (0.62)	3.65 (0.48)	3.11 (0.32)	3.42 (0.49)
Nose	3.27 (0.64)	3.65 (0.48)	3.06 (0.41)	3.17 (0.55)

Values in parenthesis are SD.

than Fearfulness type children did, when they guess her child's mind. Main effect of parts of children's face was also significant ($F(3, 666) = 176.25, p < .01$) which indicates that mothers graded higher on eye and mouth than ear and nose significantly.

The interaction of child-rearing anxiety and parts of children's face was significant ($F(3, 666) = 3.12, p < .05$). Multiple comparisons by Holm revealed as follows. It indicates that mothers with high anxiety graded higher on eyes and mouth more than ears significantly ($ps < .05$). Mothers with low anxiety graded higher on eyes more than ears significantly ($p < .05$).

The interaction of children's temperament type and parts of children's face was significant ($F(3, 666) = 3.12, p < .05$). Figure 1 shows which part of child's face mother with four type child use as cue to guess her child mind. Multiple comparisons by Holm revealed that mothers with Standard, Fearfulness and Sensitive type child graded on eyes and mouth more than ear and nose significantly ($ps < .05$) and that mothers with Periodicity type child graded on eyes and mouth more than ear ($ps < .05$)

and on eye more than nose significantly ($p < .05$).

The first purpose of this study is to examine whether mother's child-rearing anxiety influence how mother use information of parts of her child's face. The result of this study indicates that mother with high anxiety graded on eyes and mouth more than ears significantly, when they guess their child's mind. Mothers with low anxiety graded on eyes more than ears significantly. This result suggests that mothers with high child-rearing anxiety guess their child's mind based on eyes and mouth selectively, although mothers with low child-rearing anxiety guess their child's mind based on eyes, mouth, ears and nose widely.

The other purpose of this study is also to examine whether children's temperament type influence how mother use information of parts of her child's face. The result indicated that when mothers with Standard, Fearfulness and Sensitive type child guess their child's mind they graded on eyes and mouth more than ear and nose significantly and that mothers with Periodicity type child graded on eyes and mouth more than ear and on eye more than nose significantly.

This result suggests that mothers with Standard, Fearfulness and Sensitive type child guess their child based on information eyes and mouth more than ear and nose selectively although mothers with Periodicity type child guess their child based on the information of eyes, mouth, ear and nose widely.

To sum up, mothers with high child-rearing anxiety pay attention to few parts including eyes and mouth selectively to guess their child’s mind, although mothers with low child-rearing anxiety pay attention many parts to guess their child’s mind

widely. Mothers with a child for whom it is easy to bring up pay attention to few parts to guess their child’s mind selectively although mothers with a child for whom it is hard to bring up pay attention many parts to guess their child’s mind widely. These results suggest that difficulty of child care influence the understanding of child’s mind.

IV. Reference

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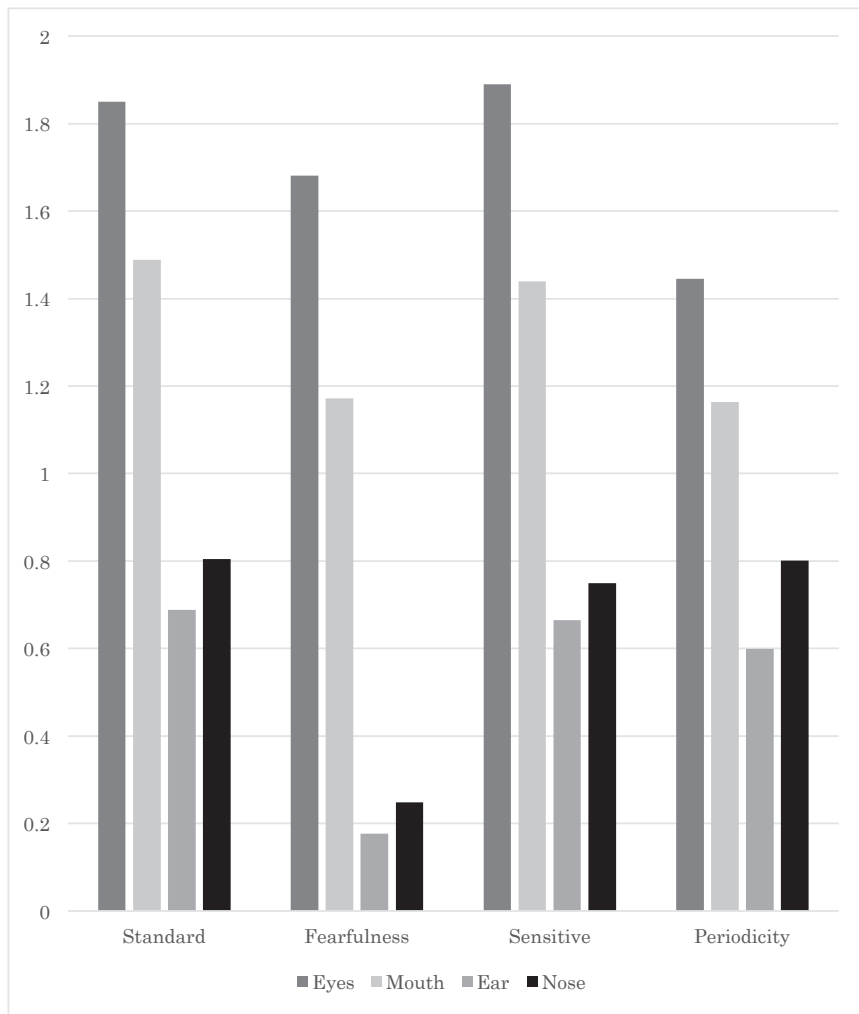


Figure 1
Part of child’s face that mother with four type child use as cue to guess her child’s mind.

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VI. Summary

The purpose of this study was to examine how mothers guess their child's mind. The results showed that mothers with high child-rearing anxiety pay attention to few face parts including eyes and mouth selectively to guess their child's mind, although mothers with low child-rearing anxiety pay attention to many face parts to guess their child's mind widely. The result also showed that mothers with a child for whom it is easy to bring up pay attention to few face parts selectively to guess their child's mind although mothers with for whom it is hard to bring up pay attention many face parts widely to guess their child's mind. These results suggest that difficulty of child care influence the understanding of child's mind.

