[Letters to the Editor]

The influence of parental eating behaviors, child-feeding practices, and infants’ temperaments upon infants’ eating behaviors

- The multivariate analysis upon infants’ eating behaviors

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To the Editor

Young children’s eating behavior is very important for kids to form a healthy eating habit throughout their life and to prevent a disease related to a diet. Preschool children who show a desirable eating behavior have few cases of revealing obesity, hypertension, diabetes, hyperlipidemia and an eating disorder when reaching adulthood. Accordingly, what children are allowed to have a desirable eating habit is very crucial for establishing the nation’s health policy and reducing its cost. However, there are many children unfortunately who do not have a desirable eating habit. To make therapeutic intervention in order for these young kids to be capable of having a good habit in the period of infants and toddlers that the early habit is formed, it may be considered to be significant to examine which influential factors there are upon infants’ eating behaviors and to look into what the most influential factor is.

A questionnaire survey was conducted targeting healthy children aged 36-72 months who visited a pediatric clinic, and their parents. Totally 166 children participated in the survey. Examining the distribution of the collected data, the ratio of gender amounted to 80 little boys (48.2%) and 86 little girls (51.8%). The proportion of ages came to 32 people at age 3 (19.3%), 58 people at age 4 (34.9%), 76 people at age 5 (45.8%). This study was progressed by receiving the approval of Institutional Review Board (IRB) for [Approval No. HYUIRB-202105-007-1].

To see infants’ problematic eating-behavior scale, the child-domain questionnaire in the Eating behavior test for infant and young children was used. The child eating-behavior domain includes three factors in pickiness, overactivity, irregularity. To look for parental eating behaviors, the parent-domain questionnaire in the Eating behavior test for infant and young children was used. The parent eating-behavior domain includes three factors of irregularity,
pickiness, permissiveness. And to see parental feeding styles, the questionnaire in the parent
domain for the Eating behavior test for infant and young children\textsuperscript{1}) was used. Infants’
temperaments were evaluated by using the Junior Temperament and Character Inventory
(JTCI)\textsuperscript{2}). Infants’ temperament domain includes 4 factors in novelty seeking, harm avoidance,
reward dependence, and persistence.
Statistical processing was applied SPSS/WIN statistical program 22.0. A relationship among
the child age, the parental eating behaviors, the parents’ feeding practices, the children’s
temperaments and the children’s eating behaviors was analyzed by using Pearson's Correlation
Analysis. To figure out the influence upon problematic eating behaviors in the factors of
showing a correlation with children’s problematic eating behaviors, the multiple regression
analysis was carried out by using the Forward Selection Method.
The pickiness among children’s eating behaviors presented a positive correlation with parents’
picky eating behavior, parents’ permissive dietary behavior, children’s novelty-seeking
temperament, harm-avoidance temperament, and reward dependence. Next, overactivity
among children’s eating behaviors reflected a positive correlation with parents’ permissive
eating behavior, children’s novelty-seeking temperament, and children’s reward dependence.
And it indicated a negative correlation with children’s persistence. Lastly, irregularity among
children’s eating behaviors expressed a positive correlation with pickiness among parental
eating behaviors and novelty seeking among children’s temperaments. It showed a negative
correlation with parents’ feeding practice and persistence among children’s temperaments.
The pickiness among infants’ problematic eating behaviors could be known to be affected by
harm avoidance($\beta=.258$), reward dependence($\beta=.196$) out of young children’s temperaments
and parents’ picky dietary life($\beta=.154$). The overactivity out of young children’s problematic
eating behaviors appeared to be influenced by novelty seeking($\beta=.275$) and reward
dependence($\beta=.191$). Among infants’ problematic eating behaviors, the irregularity was
indicated to be affected by parents’ picky dietary life ($\beta=.237$) parents’ feeding practice($\beta=-.261$)
and children’s novelty seeking temperament($\beta=.148$). <Table 1>

A child with high harm-avoidance propensity may express strong resistance while the child
feels that a stimulus to new food is dangerous. Children with high reward dependence can be
sensitive to irritation around them, they also can respond to new food stimulation sensitively.
In case of picky eating behaviors of parents, the parents themselves can be seen to be serious
in picky eating or to be strong in aversion to new food. The parents' picky senses might be
inherited by their children\(^3\), and even by which the parents’ eating behaviors were modeled on
their children, resulting in having been learnt in living.\(^4\)

Children with high novelty-seeking temperament get excited easily by new stimuli and may
represent a difficulty in observing the rule of eating during mealtime. Children with high
reward dependence reflect the problem of overactive eating habit. In accordance with the
research, the eating disorders (anorexia nervosa, bulimia nervosa) may develop into reward-
dependent syndromes. The abnormal behavior and the abnormal reward process in patients
with eating disorders have influence upon energy balance and hormones (leptin, ghrelin).
And so the patients with eating disorders can present hyperactivity which is potentially
rewarding for eating disorder patients. \(^5\) Moreover, the ADHD children who show
hyperactivity are sensitive to rewards, but the pattern of reinforcement may be different from
that of normal children. \(^6\)

For the last, the irregularity in eating behavior is the scale that shows whether being constant
in the amount of food, whether looking for food at regular times, and whether being the same
in an eating pattern. Children who have higher novelty-seeking temperament are more impulsive and have difficulties in accepting the rules and keeping regular eating habits. And ‘pickiness’ among parental eating-behavior problems implies parents’ serious picky eating or repulsion against strong scent or new food. Children have a high tendency to model the eating behavior of a person who has a close relationship. Thus, the parental eating behavior may have an effect on children.7) Parents’ appropriate feeding practice is what shows how much the parents are involved in and control their children’s meals. Thus, the lower the parents’ feeding practices may lead to showing the irregular eating behaviors. Children who were nurtured with parents’ well-structured parenting style can be known to have a more regular eating habit.8) According to other research, the eating behavior was represented depending on age.9) But this study could not evaluate the difference in eating behaviors depending on the age because of the narrow range of age. Furthermore, parents’ behavior and child-rearing attitude may affect on the formation of children’s temperament.10) Consequently, a more in-depth further research is needed between children’s temperament and parents’ behavior and child-rearing attitude.

Graphical abstract
Footnote

Conflicts of interest: No potential conflict of interest relevant to this article was reported.

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References


3. Food fussiness--it may be inherited! Child health alert 2007;25.


Table 1. Stepwise multiple regression analysis on the factors of influencing children’s picky eating behaviors, overactive eating behavior, and irregular eating behaviors

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>F</th>
<th>( R^2 )</th>
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<td>[.258^{**}]</td>
<td>10.539^{***}</td>
<td>0.163</td>
<td>0.148</td>
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<td>Reward dependence</td>
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<td>Novelty seeking</td>
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<td>Parental eating behavior</td>
<td>Pickiness</td>
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<td>Permissiveness</td>
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<td><strong>Overactive eating behavior</strong></td>
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<td>[.275^{***}]</td>
<td>11.221^{***}</td>
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<td>Reward dependence</td>
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<tr>
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<td>Parents’ feeding practice</td>
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</table>
A relationship among the child age, the parental eating behaviors, the parents’ feeding practices, the infants’ temperaments, the young children’s eating behaviors was parsed with Pearson's Simple Correlation Analysis. After then, to look into the influence upon problematic eating behaviors in factors of reflecting a correlation with children’s problematic eating behaviors, the multiple regression analysis was executed by using the Forward Selection Method.