Repeatability of the infant food reinforcement paradigm: Implications of individual and developmental differences

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Methods

Participants: 37 infants 9-18 months old
Inclusion Criteria: 9-18 month old, > 37 weeks gestation, >2500 grams birth weight, no developmental delays. Mother’s age at birth >18 years of age, no alcohol, smoking, or illicit drug use during pregnancy

Laboratory Visits:
• Four appointments— the first two visits were scheduled two days apart, measuring either the food or non food task. This was repeated for the second two visits.
• Food portion of the task was the infants favorite food rated by the parent
• Non food portion of the task was blowing bubbles
• Infants were first given time to play to become comfortable with the environment, then played the computerized task (figure 1).
• The infant and mom’s height and weight was taken at the last visit

Results

<table>
<thead>
<tr>
<th>High Intensity Pleasure</th>
<th>Approach</th>
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<tbody>
<tr>
<td>Food Pmax1</td>
<td>2.044 0.091 0.081 -0.147 0.005 0.879</td>
</tr>
<tr>
<td>Food Pmax2</td>
<td>1.566 0.059 0.171 1.098 0.039 0.277</td>
</tr>
<tr>
<td>BUB Pmax1</td>
<td>3.212 0.287 0.001 0.446 0.037 0.607</td>
</tr>
<tr>
<td>BUB Pmax2</td>
<td>1.017 0.048 0.304 0.638 0.056 0.425</td>
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</tbody>
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• Infant temperamental factor of high intensity pleasure, but not approach, significantly predicted BUB Pmax1 (β = 3.21, p = 0.001), based on linear regression models
• Participants with stronger positive responses to novelty were more likely to work for bubbles at time 1, but not time 2
• Food Pmax1 and Pmax2 were not significantly predicted by either high intensity pleasure or approach

Figure 2: Infant participant playing with bubble FRR task

Figure 3: Comparison of reinforcing value of food and non-food alternative measured at two time points.

Conclusions

• Novelty responsiveness could play a role in infants’ initial behavior in the task, therefore in the future we will integrate an acclimation visit to downplay the effect of novelty on repeatability
• Further information on infants’ prior exposure to bubbles would help to analyze the extent that novelty influenced the results
• By establishing procedures to reliably measure FRR among infants, new avenues of research open on the role of early individual differences in appetitive traits in the development of obesity

References