Can visual exposure impact on children’s visual preferences for fruit and vegetables?

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Evidence suggests that the consumption of fruit and vegetables (F&V) can reduce the risk of CVD and cancers of the mouth, lung and stomach. As dietary variety in infancy predicts continued healthy eating⁴, the early introduction and consumption of F&V in young children is paramount to ensuring future public health. However, the introduction of new F&V can be difficult, as between 8 and 15 taste exposures may be required in order for children to develop a taste preference for an unfamiliar food². For children with high levels of food neophobia (a reluctance to try new foods), the introduction of F&V into the diet can be even more challenging as high food neophobia is associated with lower levels of consumption of fruit and vegetables⁷.

Recent work by our group has demonstrated that visual exposure to pictures of unfamiliar fruits and vegetables impacts on both children’s visual preferences for these foods⁴ and their willingness to taste them⁵. However, given that over-exposure of a liked food can lead to satiation or dislike⁶, it is possible that repeated visual exposure may similarly produce negative effects for foods that are already liked. To test this hypothesis, we explored how visual exposure affects visual preferences in infants showing high and low levels of food neophobia.

Sixty toddlers received a picture book about a fruit or vegetable that parents had told us was either liked, disliked or unfamiliar to the child. After 14 daily parent-administered presentations of the book, children’s visual preferences towards exposed and non-exposed foods with the same initial status were measured using standard preferential looking techniques⁴. Neophobia was measured using the Child Food Neophobia Scale (CFNS)⁷. The table presents children’s total looking times in milliseconds (ms) towards exposed and non-exposed foods.

<table>
<thead>
<tr>
<th>Total looking time (ms)</th>
<th>Liked foods</th>
<th>Unfamiliar foods</th>
<th>Disliked foods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fruit (n=11)</td>
<td>Vegetables (n=12)</td>
<td>Fruit (n=12)</td>
</tr>
<tr>
<td>Exposed</td>
<td>Mean (sd)</td>
<td>Mean (sd)</td>
<td>Mean (sd)</td>
</tr>
<tr>
<td>3424⁴ 700</td>
<td>3016 481</td>
<td>3683⁷ 526</td>
<td>3517⁷ 479</td>
</tr>
<tr>
<td>Non-exposed</td>
<td>2361 446</td>
<td>2833 316</td>
<td>2361 446</td>
</tr>
</tbody>
</table>

⁴Significant preference for exposed food, P<0.05.

For all categories, children looked longer at pictures of exposed foods than non-exposed foods. While this preference was not significant for liked vegetables, it is worth noting that there were no significant negative effects of exposure for any food group. There were also no significant differences in the behaviour of children with high and low levels of neophobia (all P>0.05). The robustness of the effect of visual exposure on children’s willingness to look at foods suggests that this strategy should be explored as a means of increasing young children’s intake of fruit and vegetables.


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