Nature and Nurture in Early Feeding Behavior

Lucy Cooke

Obesity has reached epidemic proportions and research into prevention is increasingly focusing on the earliest stages of life. Eating behaviors characterized by a large appetite have been linked to a higher risk of obesity, and obese individuals tend to eat faster, fill up less easily and to value food more highly than those of a normal weight. Variation in appetite can be seen in infants and are associated with growth trajectories. Research has shown that both weight and appetitive traits are heritable in adults and children, but the dramatic rise in obesity in recent decades is also attributable to a changing food environment. However, the fact that it is the individuals with the highest BMIs who are gaining most weight points to gene-environment interactions. The behavioral susceptibility model suggests that those with more avid appetites are more likely to overeat in environments where palatable food is plentiful.

Studies of appetite in infants are scarce, and the observation that genetic effects on weight are expressed before children reach school age led to the establishment of Gemini – the Health and Development in Twins – Study, comprising over 2,400 UK families with twins. The aim was to investigate genetic and environmental determinants of weight trajectories in early childhood with a focus on appetite and the home environment.

Gemini families have been supplying data at regular intervals, starting when the twins were 8 months old. Analyses of the data on infant appetite and weight have provided a number of important findings. Firstly, a prospective study found that appetite in infancy drives weight gain more strongly than weight drives appetite, although the two processes do coexist [1]. A further study using a subsample of twins discordant for appetite ruled out the possibility of familial confounding, suggesting a causal role for appetite in weight [2]. An investigation of the relative contribution of genes and environment to four appetitive traits resulted in heritability estimates that were moderate to high (53–84%) with the remaining variance explained by environmental factors [3]. Finally, multivariate analyses
indicated that roughly one third of the genes related to weight are also related to appetite and vice versa [4]. These results support the behavioral susceptibility hypothesis that those who are genetically predisposed to a larger appetite will eat more when there is an abundant food supply.

The strong genetic component to appetite does not mean that modification is impossible of course. Environmental factors affecting appetite in infancy are understudied, although research with older children emphasizes the importance of parental feeding practices in changing or maintaining children’s eating behavior. Potential strategies for minimizing the likelihood of over- or underconsumption in at-risk individuals are suggested.

References