

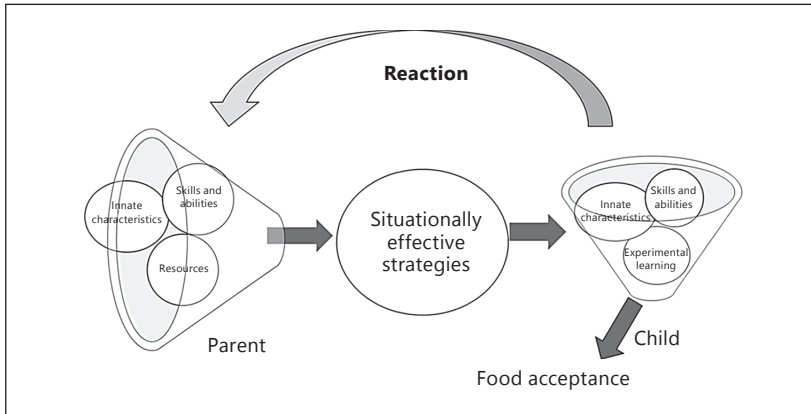
# Flavor and Taste Development in the First Years of Life

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Across the first 4 years of life, infants transition from a liquid diet to solid foods. Infants and young children experience sensory inputs differently than adults, and eating is a multisensory experience. Flavor preferences affect the acceptance of novel foods, and infants and young children may require multiple tastes before they accept a food into their repertoire. Experiences prior to birth, as well as the flavors with fluids, influence the newborn's flavor development. With the introduction of complementary foods, infants develop preferences for foods. These flavor experiences influence the diet of the young child and set the stage for later eating habits.

Fetuses experience flavors in the uterine environment, and some preferences appear to be innate. Sweet and salty flavors tend to be accepted by most newborns, while bitter tastes are rejected [1]. These preferences appear to continue through the early years, as slightly salted vegetables appear to be more readily accepted during the transition to complementary foods, and sweetened foods are chosen over more bitter foods (e.g. vegetables) when preschoolers are allowed to self-select. Breastfed infants appear to have an advantage over formula-fed infants, as they are exposed to a varying flavor profile provided by the mother's diet. There are data to suggest breastfed infants are more accepting of novel foods, although the number and variety of food experiences appear to be more powerful predictors of taste acceptance [2]. Formula-fed infants demonstrate a preference for flavor profiles similar to those underlying their formula, and even become brand specific in their preferences. The preference for similar profiles (e.g. bitter, sour profiles from specialized formulas) can influence the foods preferred by the infant during complementary food introduction.

Infants are fairly accepting of novel foods, but rejection of new foods increases across the initial years of life. Infants may demonstrate facial behaviors that indicate a 'dislike' but still eat the offered food. Taste exposure is a powerful intervention to improve acceptance of novel foods.



**Fig. 1.** Responsive feeding model for situationally effective strategies.

Allowing the child to spit out the food increases their willingness to taste the food. Children exposed to more tastes are more likely to integrate that food into their food repertoire. A greater variety of taste exposures also appears to increase generalized acceptance [3].

Despite a wealth of knowledge regarding the development of taste preferences in young children, improving the quality of children's diets continues as a major focus of countries as well as the World Health Organization. While repeated exposures are an effective way to teach children to eat more nutritious foods (e.g. fruits and vegetables), parents typically offer foods only 2–3 times before stopping because they feel their child does not like the food. Some children are more accepting of various sensory inputs present during mealtimes. Parents report a greater challenge getting multiple taste exposures when their child exhibits less sensory adaptability [4]. Parents may use appropriate behaviors with a child who accepts most sensory inputs easily and may resort to ineffective strategies with children who are less tolerant. Research is just beginning to evaluate the child characteristics that influence parental behaviors. Based upon the child's response, the parent may resort to ineffective strategies, and in some cases, their strategies may actually compound the problem of food rejection. A model of this interactional relationship during mealtimes is presented, highlighting the need to identify and educate caregivers on situationally effective strategies to be used during the complementary feeding period (fig. 1). Strategies to help parents be more successful in achieving taste exposures in a positive social environment need to be identified.

## References

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