A LINE ON LIFE

2/15/98

A Matter of Taste *

David A. Gershaw, Ph.D.

Animals eat for nutrition. We humans also eat to taste. We seek a variety of flavor and taste sensations. What influences the particular foods – or flavors – that we like?

One group of biopsychologists and nutritionists is trying to link food preferences to very early experiences. Our taste preferences may be learned through breast milk or amniotic fluid. For example, when a mother eats garlic, her baby will suckle longer. It's not that they are drinking more milk. They seem to be keeping it in their mouth longer to analyze what they are drinking. They are pausing to perceive the flavors. Vanilla extract leads to similar behavior. Even rodents, sheep and pigs, once weaned, show preferences to flavors that were in their mothers' milk.

Likewise, amniotic fluid in the womb picks up a distinctive smell after a pregnant woman eats garlic. This change may be detected by the fetus, and this may influence taste preferences.

Another group of researchers is exploring the tongue and the taste buds themselves. They want to see how people respond differently to tastes like bitter and salt. In the 1930s, researchers found an inherited taste difference in the way people responded to **6-n-propylthiouracil (PROP).** To **tasters**, this substance tastes bitter. In contrast, to others labeled as **nontasters**, it didn't taste much different from water. As you might guess, nontasters eat a greater variety of foods than tasters.

A few years ago, psychologist Linda Bartoshuk (Yale University) found a group of people who found PROP *more* offensive than tasters. She called these people ***"supertasters."*** A dietitian associate of Bartoshuk, Virginia Duffy (University of Connecticut), found that supertasters perceive tastes more intensely that either tasters or nontasters. Bitter tastes are more bitter, salt tastes saltier, and sweets taste sweeter.

They noted that the tongues of these groups were different. Supertasters have more *fungiform papillae* on their tongues. These are the little bumps on the tongue that hold the *taste buds*. In the United States, about 25% of people are supertasters, 50% are tasters and 25% are nontasters. Women are more likely to be supertasters than men.

However, when we eat, we savor more than the taste. The "*feel*" of the food can be just as important. About 75% of the nerves coming from the taste buds lead to the **trigeminal nerve**. In turn, the trigeminal nerve connects to pain and touch centers in the brain. With more taste buds, supertasters may "*feel*" foods more intensely too. Supertaster women rate fat as creamier than tasters or nontasters. This is more likely related to the "*feel*" of the fat rather than its taste. (I know I relish the cold, creamy smoothness of ice cream along with the sweet taste.)

Supertasters are also more sensitive to a "*burn*" from some foods. These include ginger, alcohol, the

carbon-dioxide in soda, and capsaicin – the active ingredient in chili peppers.

Psychologist Adam Drewnowski (University of Michigan) believes that these differences in taste sensations lead to different taste preferences. In contrast to tasters or nontasters, supertasters are more likely to reject bitter foods. This includes a range of soy products like tofu, miso, and soy milk. Green tea is more likely to be rejected too. Naringin – the bitter chemical found in grapefruit juice – is less appealing to supertasters. Supertasters also give lower ratings to coffee, cabbage, Brussels sprouts and spinach.

Drewnowski studied 123 women to find out if supertasters were more likely to avoid foods high in **anti-oxidants** – vegetable compounds believed to ward off cancer. However, there was no clear evidence that their taste preferences lead them to avoid foods with anti-oxidants.

All of us know that increased fat in the diet leads to **obesity**. Does the variation in taste buds affect preferences for fats? Duffy found that – in contrast to tasters and nontasters – supertasters indicate less preference for sweets and fats. It seems that supertasters found the sweets and fats to be too intense in their taste. In another study, Drewnowski found no difference among taster status and preference for sweetened dairy products.

Some researchers believe that these taste differences are left over from our evolutionary past. They may have been safety mechanisms to help us avoid toxins and unhealthy foods. Duffy's work finds some evidence to support this. During the first trimester of pregnancy – when toxins would most severely affect the fetus – women become more sensitive to bitter flavors.

Although tastes are influenced by heredity, eating habits can be significantly influenced by early training.

We may worry that being a supertaster would discourage us from eating a healthy diet. However, children are not controlled only by genetics. Our tastes are adaptable. As infants, early aversion to vegetables – beans and peas – can be changed by their repeated use in baby foods. In addition, several studies indicate positive relationships between the variety in mothers' diets and their infants' eagerness to eat a wide range of foods. It is likely that our children want to eat what we eat. Even in their infancy, we need to model good eating habits.

---

* Adapted from Beth Azar's "What predicts which foods we eat?," *The APA Monitor*, January, 1998, pages 10, 13.