Early Childhood Caffeine and Sugar Habituation

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The problem of high sugar intake in the diets of American and English school children has been noted by Yudkin (1972) and Powers (1973). The taste for sugar is a cultural pattern promoted by high levels of sugar in commercial baby foods and a per capita consumption of more than 120 pounds per person per year in the U.S.A. Caffeine has also recently been reported as a source of dietary abuse among a population of children with developmental and learning disorders (Powers, 1975; Abrams, 1976). The common sources of caffeine include brown soft drinks, chocolate, and tea for children as well as the better known coffee source, all of which are subject to patterns of cultural preference.

Dietary histories in a private learning clinic in Dallas, Texas, revealed a cultural phenomenon in which many mothers reported giving sugared tea in a baby bottle to their children as babes-inarms. The practice of giving this combination of caffeine and sugar was often encouraged by physicians during illness or as a developmental practice just to keep the baby happy. An early taste for tea was therefore developed, and many children were allowed to drink tea, either with or without sugar, on a regular basis for a snack or with meals as a substitute for milk.

In order to more formally study the incidence of the tea-drinking phenomenon in the Dallas area, 240 students from normal classes in the metropolitan area were questioned concerning their intake of coffee, tea, or brown-colored soft drinks. These subjects were selected at random from pools of dichotomous groups of high- and low-achieving males and females at grades four, eight, and 12. The following information was collected from each subject: the drinks ordinarily consumed and the quantity; whether or not sugar was added to the drink; and the age at which tea drinking began if tea drinking was practiced presently or in the past.

The quantities consumed were divided into three intake categories: high intake if two or more glasses or servings of tea or cola were consumed daily; moderate intake if one-half to one glass was consumed per

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day (three or fewer over a period of a week). Review of the records also revealed a number of cases of extreme dietary abuse of tea and cola which went beyond high intake, although this group was initially included in the high intake category.

The results were striking. Only 22 of the 240 students did not regularly drink tea or another source of caffeine. Of those who drank tea, 1% added one or more teaspoons of sugar per glass. From among the 80 twelfth graders, coffee drinkers numbered five, and regular daily cola drinkers amounted to 17. While only 20 students reported that they began drinking tea at age one or before, 142 or 59 percent reported learning to drink tea at or before age six. These data are not as reliable as or directly comparable to the clinical histories from the mothers, but the trend toward early introduction to sweetened tea is confirmed.

No significant differences were noted between sexes or between high and low achievers when Chi square tests of independence were applied to the proportions found in the various intake categories. No significant differences were noted between any of the groups at any of the grade levels when categories of high, moderate, or low intake of tea or sugared tea were compared.

When the data regarding the dietary abuse at 12th grade was used to compare high and low achievers, however, a notable difference emerged. Among the 40 high achievers, only one male and four female subjects fell into the abuse category. Among the 40 low achievers, five male and 10 female subjects exhibited dietary abuse. The differences between the high and low achievement groups on the basis of abuse—no abuse yielded a Chi square of 5.46 with correction for continuity—was significant at the .02 level. A significant difference in caffeine-sugar abuse therefore existed beyond chance probability between the high and low achievement groups.

Cases of caffeine abuse are typified in the following examples: (1) two to three glasses sweetened tea daily since infancy; (2) two to three colas daily, sweetened tea since age two; (3) four to five colas daily, sweetened tea from age eight; (4) six glasses sweetened tea daily since age six. One extreme case reported 15-20 glasses of unsweetened tea daily, following early introduction at age six months. Some reported that they "always" drank tea, as far back as they could remember.

The data confirms the general cultural practice of tea drinking among the children of the Dallas area. The ages at which the practice begins will vary, depending possibly upon who is reporting. That is, the mother will probably have a more precise knowledge of the first introduction of the child to tea and have a more objective idea of the amount consumed.

The tea-drinking cultural phenomenon among school children in the Dallas area may reflect a wider practice throughout the southern United States which bears further investigation in each local area. Researchers and clinicians should be encouraged to collect more data on local dietary phenomena of various types.

While it cannot be said that a direct cause-effect relationship exists between the caffeine-sugar intake and levels of achievement, the finding of significant differences between achievement groups on the basis of dietary abuse may indicate a need for a more comprehensive dietary review and nutritional differential diagnosis procedure in education for students suffering from learning disorders or general underachievement.

Consumption quantities may only be important in relation to the individual vulnerability inherent in the characteristics of biochemical individuality for a given subject. Some low achievers may be less tolerant of a given substance such as caffeine or sugar, or be more likely to habituate or use it in an abusive or addictive manner. The purpose of this study is to point out the cultural practice which fosters early introduction of a substance which may have negative con-

sequences for certain vulnerable children.

In addition to the known stimulants sugar and caffeine, wider recognition should be given the presence of other stimulants in foods. For example, the agents theobromine, found in the Cola Nut (used in brown soft drinks) and the Cacao Bean (source of chocolate and cocoa), and theophylline, found in tea, produce well-known diuretic, cardiac stimulation, and vasodilator effects.

As a postscript, the reader may be interested in knowing that schools are required by statute in Texas and many other states to lock all soft-drink dispensing machines during lunch periods in the hope that students will choose milk as a beverage. The Dallas school board, during the spring of 1975, voted to require all empty-calorie junk food and candy vending machines to be eliminated and replaced with sandwich and fruit dispensing machines. The legislature of the State of West Virginia has mandated similar restrictions on the sale and distribution of junk foods in public schools, and other state legislatures are looking at similar food-quality regulations for the public schools.

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