CHAPTER V: RESULTS AND DISCUSSION: HEALTH AND NUTRITION PERCEPTIONS OF DAIRY FOODS AND EXTERNAL INFLUENCES ON DAIRY FOOD CONSUMPTION

Health and Nutrition Perceptions of Dairy Foods

Calcium

Women in this study were aware of the high calcium content of dairy foods. Women in all of the focus groups thought the calcium found in dairy foods was a health benefit. The majority of the women mentioned, "*Calcium,"* when asked to discuss the advantages or benefits of consuming dairy foods. Furthermore, women discussed calcium in relation to bone strength and teeth, as evident in the following responses: *"I always heard calcium was good for your bones, but other than that, I really don't think about it;" "You have better teeth, right?" "Good for your skin and smile, your pearly whites;"* and *"Doesn't it increase bone density? Is that it? So that just makes your bones stronger and healthier."* Women seemed to respond by asking questions, indicating they were aware of these associations between calcium and bone strength and teeth, but were looking to the researcher for reassurance that their perceptions were accurate. Eddy (1997) also found that educated elderly women thought calcium in dairy foods was important for bone strength during focus group discussions about the advantages of dairy foods; many deliberately consumed dairy foods with this benefit in mind. A few women in this study did mention that they ate dairy foods because of the calcium in these foods. One woman explained,

> *"I'm not a huge fan of milk, like, I make myself drink it, because I worked at a hospital and got lectures from the doctors all the time about calcium, but, like, I don't—I don't like the taste of it, and I would usually rather have a glass of water before I have milk."*

However, the majority of women did not seem to consume dairy food specifically for the calcium, but instead expressed to the researcher that they simply liked dairy foods.

Fleming and Heimbach (1994) reported that women between the ages of 12 and 29 years had the lowest intake of calcium in comparison to the RDA. During these ages, many women consume less than 60% of the RDA for calcium. However, results of NHANES III (Alaimo et al., 1994) indicate recent improvements in calcium intake for females 18-24 years of age. Mean intakes of calcium were reported to be 796-833 mg/day.

When participants were asked to think about their dairy food consumption when they were their mother's and grandmother's ages, most said they would probably be more conscious of their dairy food consumption at those ages. At their mother's age, most women indicated they would be more conscious and aware of their dairy food consumption in general. At their grandmothers' age, women thought they would make more specific changes in their dairy food consumption. These feelings were evident in responses, such as: *"To maintain your bones, you need to get a lot more calcium then, because I know of a lady that's in her fifties that already drinks, like, massive amounts of calcium";* and *"I'll try to be more conscious of it though, like, 'oh, I need to get—I need to drink some milk, or I need to get some calcium'."* Although these responses indicate that the women associated calcium with maintaining good health, there seemed to be a general feeling that any consequences from not consuming dairy foods were "far off", not an immediate concern. Responses also seemed to indicate that women were only mentioning milk as a source of calcium, suggesting that women viewed milk as the predominant dairy food containing calcium. Other foods were mentioned later in regards to calcium, but the focus usually seemed to return to milk.

These findings for young women differed from those reported by Eddy (1997) for educated elderly women. Elderly women associated calcium consumption with reduced risk of osteoporosis, as did college women; however, college women did not perceive health consequences from inadequate calcium to be immediate. In comparison, Neumark-Sztainer et al. (1997) surveyed adolescent females (grades 7-12) about their

nutrition knowledge and behaviors. Eighty-two percent of those young women surveyed reported consuming less than 60% of the calcium RDA (1,200 mg/day) for college age women, suggesting these women might not be aware of the need for calcium.

Osteoporosis

Women in the focus groups thought calcium was an important nutrient and discussed it in relation to osteoporosis. When women were asked to discuss the advantages of dairy foods, many women often mentioned calcium for the prevention of osteoporosis, as evident by responses, such as: *"Calcium, because of osteoporosis,"* and *"Osteoporosis prevention."* Most women were aware of osteoporosis and could describe it. When asked what osteoporosis meant women responded with comments such as, *"Bones wasting away," "just being frail…and weak," "old people…that can't walk," "two broken hips'"* and *"pain."* Another woman stated, *"I picture a little old lady who's just bent over."* These descriptions indicated to the researcher that women were aware of the debilitating or crippling effects of osteoporosis and associated this disease with older women. One woman from the JMU focus group associated menopause with osteoporosis as she remarked, *"…now my mom's going through [menopause] and she's constantly [complaining] about how her bones are going to break, her bones are going to break…"*. These findings were important, because they suggest to the researcher that college women thought they would not develop osteoporosis until they are much older.

In the WM focus group, two participants seemed very concerned with osteoporosis. The following responses illustrate the concern of these two participants: *"I just like [dairy foods]. I do it all the time, because I think [osteoporosis] runs in my family—I can tell my mom's getting shorter, so…";* and

> *"[Osteoporosis] is the sole reason why I drink milk, I mean, I like—I like cheese and stuff like that, but that's basically the only—like after seeing a lot of older ladies and, like, seeing x-rays and stuff…because before that I never listened to my mom…".*

These women saw how osteoporosis affected others and thought that it could affect them one day. Blalock et al. (1995) found that middle-aged women (ages 35-45) who were

currently thinking about increasing their intake of calcium perceived osteoporosis as more controllable, associated more benefits with calcium consumption, and viewed calcium as more effective in reducing their risk of developing osteoporosis than those who were not engaged in preventive behaviors to reduce the risk of osteoporosis.

Women differed in their opinions of whether they felt they were at risk for developing osteoporosis. Some women did not seem to be concerned with developing osteoporosis. The following responses illustrate this: *"I—I don't think I'm at risk at all, maybe I am, but I just don't even think about it";* and *"I don't really think about that either, because I just like—I like milk so much that I don't really think I—I'm affected."* Other participants tended to feel they were more at risk for developing osteoporosis, as the following illustrate: *"I think I'm going to get it,"* and *"I probably got a high risk now."* These comments indicated to the researcher that some women felt their present dairy food consumption habits might not be sufficient to prevent this disease. However, women gave no indication of changing their habits until they were older, as seen in the following remark regarding dairy food consumption at their grandmother's age: *"I just have this feeling that you may just be a little more conscious of it, like, 'ohhh—my hip needs it'."*

Findings differed somewhat from results reported by Eddy (1997) on elderly women's perceptions of dairy foods and osteoporosis. Elderly women perceived osteoporosis as a threat due to their age and to friends diagnosed with it. Some reported having osteoporosis themselves. Surprisingly, though, a few college women in this study, also perceived this threat as "real" to them as previously noted. Neumark-Sztainer et al. (1997) surveyed adolescent females' beliefs about osteoporosis and reported that beliefs were not associated with behavior or nutrition knowledge. There was no significant relationship between osteoporosis beliefs and calcium intake, and women surveyed were not practicing osteoprotective behaviors. These findings indicate that young women perceive osteoporosis to be a "distant" disease, which is consistent with the opinions expressed by the majority of the women in this study.

Calcium Supplementation

Calcium supplementation was addressed in this study as research has shown that supplement use among college age women is prevalent with approximately half of the college population using supplements (Eldridge and Sheehan, 1994). Half (14 of 28) (Table 3) of the women indicated they took supplements on the socio-demographic questionnaire. Women from all focus groups took supplements, with the majority of women in the JMU group (5 of 7) reporting supplement use.

Women were specifically asked during the focus group discussions about calcium supplements and reasons for using supplements. Although women were aware of the calcium in dairy foods (particularly milk), women reported that they used supplements, such as calcium supplements and multivitamins, to meet calcium needs. One participant mentioned using Tums® for the calcium, because Tums® were chewable and tasted better than calcium pills. Results reported by Eddy (1997) indicated that many elderly women relied on Tums® for calcium. The following are examples of reasons that the college women gave for using calcium supplements: *"I do…because I don't eat enough dairy"; "…and I mean, because I don't drink milk at college and I eat cheese, but not in the amounts that I don't think I should, so the supplements are just easy to do";* and *"…cause I don't drink a lot of milk, and I know I don't. I started last year, and I knew I really didn't drink any milk last year. This year I'm much better and I eat a lot of yogurt and cottage cheese, but I still go ahead and take [calcium supplements]."*
Another woman thought that consuming adequate calcium was important, as she explained, *"I just think it's very important, especially for a woman, to get their daily percentage of calcium, so that's why I take it."*

The prevalent use of calcium supplements suggested to the researcher that these women did not feel they could obtain adequate calcium from dairy foods and that supplements were an easy way to fulfill their calcium needs. These findings are consistent with those reported by Eldridge and Sheehan (1994), who found that the most common reason that college students gave for taking supplements was "to make up for

what is not in food." However, some women in this study said they were not consistent in their use of supplements due to forgetfulness or to "losing the habit of taking them." Overall, results were similar to those reported by Eddy (1997) who found that elderly women relied on calcium supplements, especially Tums®, to help meet calcium needs.

Many participants in all focus groups mentioned using other vitamin/mineral supplements. Some mentioned a multivitamin, and others mentioned supplements that included iron, vitamin E, vitamin C, B-complex, ginseng, and an herbal supplement. One participant mentioned using lecithin supplements during the previous summer for "fat redistribution." Reasons women gave for taking these supplements included, *"I take vitamin C because I don't eat as much fruit at school as I do during the summer at home, and cause I seem to get sick easier at school than at home";* and *"…it was, like, an all-around type thing. I knew I wasn't eating as good as I should've been. I figured I wasn't getting the proper vitamins and stuff."* Again, these reasons for supplement use are consistent with what Eldridge and Sheehan (1994) reported as common reasons for supplement use among college students. Common reasons included to prevent colds and other illnesses and to make up for what is not in food.

Fat

The majority of college women were concerned with consumption of fat; therefore, a predominant theme in all of the focus groups was that many dairy foods, especially cheese and ice cream, are high in fat. This perception was noted particularly during discussions of dairy foods college women seldom ate. Women responded with comments, such as: *"I love (cheese). I just don't eat it because it's got so much fat"; "I never eat real ice cream because it's got so much fat";* and *"I don't like butter. I know a lot of people will butter their bread at dinner, but I guess it's mostly fat—the taste does not compensate for any amount of fat that's in it."* The fat content of dairy foods was generally considered by women to be a disadvantage of dairy foods. When asked to explain this, women offered comments such as: *"Cheese is wonderful, but it is, like, so fattening. And you don't even realize you put it on. You have a grilled cheese sandwich and you're eating so much fat, and it's just, like, a stupid sandwich";* and *"All it is, is*

like ice cream, sour cream, cheesecake. All that stuff is good and yummy but it's, like, so bad for you." However, one woman from the UVA focus group felt fat could also be an benefit of eating dairy foods by suggesting, *"You do need fat in your diet, and that may be a way to get it."* Eddy (1997) reported similar findings for educated elderly women who frequently discussed the need to lower fat in their diet. From the women's emphasis on fat, Eddy concluded that the negative perceptions of fat outweighed the benefits of dairy foods. College women also discussed fat in dairy foods as a disadvantage, and the emphasis that these women placed on fat suggested to the researcher that negative perceptions of fat in dairy foods outweighed the positive benefits of calcium. Finn (1997) reported that in a study of 19-22 year-olds' food consumption patterns, one reason for inadequate consumption of dairy foods was that young adult women and adolescent girls perceived dairy foods as "fattening" (in terms of gaining weight).

Women's emphasis on fat seemed to indicate that the fat content of dairy foods greatly influenced the types and kinds of dairy foods these women chose to eat. Women frequently discussed the low fat dairy foods they chose, such as skim milk, low fat cheese, lite butter, and frozen yogurt, as evident in the following remarks: *"Like we usually have reduced fat cheese slices…when we were making grilled cheese all the time…," "we try to get low fat butter…,"* and *"I put skim milk on my cereal…and I only eat fat-free cheese."* Similar comments were made by elderly women during focus group discussions of low fat dairy products, as reported by Eddy (1997). This suggests both age groups of women used these products as a means to reduce fat in their diets. Guinard and Marty (1997) found that adolescent females (ages 12-15) were less willing than males to purchase regular, full fat foods when provided with nutrition information.

Skim milk use was prevalent among women in all groups. When asked to explain why they chose skim milk, one woman responded, *"For me, it's a fat issue—completely a fat issue and that's it…,"* and another said, *"Like, I usually, like, buy a big gallon of (skim) milk, …like, something that has a lot of fat in it, that's not as good for me as just drinking [skim]…"* This indicates that women used skim milk as an alternative to

high fat dairy foods. Eddy (1997) also reported that many educated elderly women used skim, 1%, or 2% milk as alternatives to whole milk. In comparison, Georgiou et al. (1997) reported, in a study comparing nutrition status between female college students, college graduates, and non-students, that students and graduates both chose low fat milk more often than non-students. The researchers concluded that education played a role in young women's low fat food choices.

When low fat foods were mentioned in the WM and VT focus groups, women offered each other suggestions for lowering fat in the diet. Responses that illustrate this are: *"And you can substitute [yogurt] with oil when you're making brownies, and you can save, like, 75% of the fat,"* and *"I know, like, I made [macaroni and cheese] the other day. They have the regular directions, and then they say reduced fat, reduced whatever, and then they give those, use skim instead, use less butter, and there's something else, but they vary it."*

When women discussed their dairy food consumption at their mother's and grandmother's ages, two predominant concepts emerged. First, some women felt they would lower their fat intake even more when they were their mother's age, as illustrated by the following: *"I'd probably work on eating healthier. I mean, I'm trying now, but I bet by the time we're our parents' age, the low fat foods will taste better"; "I'll probably cut back on ice cream…um, (because) I'll probably be less active";* and *"probably the same things, but probably in moderation, because after having kids [you gain weight]…"* Responses, such as these, indicate that the women intended to be more health conscious as they aged. It also seemed that the women associated aging with being less active; therefore, they would have to eat less fat when they are older or they would gain weight.

Secondly, other women felt they would eat more higher fat foods than they do presently for reasons, such as,

> *"I feel like when I get older, and I have a family and I'm cooking for my husband, I don't think people want to eat the kind of food I eat, fat-free butter and skim*

milk. I think they'll want cheese. I think most men don't care that much about it. I think if I make it for my family, I'll eat more of what they're eating";

and *"I'll also be doing most of the shopping for probably a family, so it's probably going to be, if it's younger children, it's probably going to be a lot of fattier foods, like cheese."* These responses led the researcher to think that women were aware that later in their lives they may need to make some compromises, especially if they marry and have families. Women also seemed to feel that they would assume responsibility for grocery shopping and meal planning in their households; therefore, they would need to keep other family members food preferences in mind.

The feeling that women would eat higher fat dairy foods when they were older was even more prevalent as women discussed what they might do at their grandmother's age. Women offered the following explanations for eating dairy foods higher in fat: *"I think I'd be eating a lot more fatty stuff by then because I will have kept my girlish figure up until then, and then I'll be about ready to let go"; "I'll be eating ice cream everyday";* and *"I think I'll eat whatever I want, because it won't really matter by then, like whatever seems good."* This indicated to the researcher that these young women were not aware of the many chronic diseases, such as cardiovascular disease, high blood pressure, or diabetes, that may impose dietary restrictions in older adults. In contrast, Eddy (1997) reported that many elderly women were limiting their fat intake due to chronic disease. One elderly woman stated, *"In cheese of course, the less fat involved, the better for us. I'm just talking about older people, the less fat, the better for us"* (Eddy, 1997). Elderly women were also encouraged by their doctors to lower fat in their diets.

It was interesting to note that several women mentioned eating out as a time that they treated themselves to dairy food. Dairy foods that they chose at this time are illustrated by the following comments: *"Some things, like, are treats. When I'm at home and I eat a baked potato, I don't even put a whole lot of butter or sour cream, but if I go out, oh yeah I do"; "I won't buy sour cream and put it on my Mexican when I'm at home,*

but if I'm out and I put it on there, and I don't forget to ask (to get it without) then I love it. I'll eat it…"; "Cheesecake only when I go to fine dining—special desserts"; and *"If I go to a restaurant that has tiramisu, I get it all the time."* The researcher noted that women mentioned high fat dairy foods (i.e., cheesecake, sour cream) as the treats that they chose when eating out.

Cholesterol

Women did not seem to be concerned with the cholesterol in dairy foods. A few women in the WM focus group discussed cholesterol, and these women thought dairy foods that were high in fat also were high in cholesterol. This was noted in comments, such as: *"When I'm at home and my mom makes potatoes and I always put butter and sour cream on them and she always says I'm going to kill myself with the cholesterol, but you know, I like it, so…";* and

> *"It's mostly—for me at least, it's the cholesterol, because when I got my blood tested, I had high cholesterol and so I started drinking skim milk all the time, because before all I drank was whole milk and then that automatically, like, took care of the problem."*

These responses indicated that some women viewed cholesterol, like fat, as a disadvantage of consuming dairy foods. Eddy (1997) reported that elderly women concerned with cholesterol consumed skim milk, but elderly women were most concerned with the cholesterol content of cheese. Cholesterol was also mentioned by one woman in the WM group in terms of foods that dining halls offered. She seemed frustrated, explaining, *"But they think that, like, their food, people aren't going to like their food, so they have to put as much fat and cholesterol in it for people to like it, so they don't think, like, the cheese can stand on their own."* Although the WM group was the only group to mention cholesterol during the focus group discussions, one woman from the UVA group, and one woman from the VT group indicated following a low cholesterol diet on the socio-
demographic questionnaire (Table 3).

Sodium

Sodium was not mentioned by college women, although two women from the VT focus group indicated following a low sodium diet on the socio-demographic questionnaire (Table 3). However, the fact that sodium was not a concern to the majority of college women was not surprising. At this age, women would probably not be concerned about their levels of sodium consumption for chronic disease prevention. However, in results reported by Eddy (1997), elderly women discussed salt content as a disadvantage of dairy foods, identifying cheeses as a dairy food high in salt. This association combined with women watching their salt intake motivated women to avoid eating cheese.

Kilocalories

While the fat content of dairy foods was a concern to the majority of college women, kilocalorie content of foods was mentioned by one woman in the JMU and one women in the VT focus groups, but was not a predominant theme. The woman from the VT group thought that kilocalories were a disadvantage of dairy foods, but no further discussion was offered at any other time during the focus group. During the discussion of the types of dairy foods the other woman thought she might consume at her grandmother's age, she commented, *"I eat a lot of Jello® now…plus, you can make the whole box and it only has 40 calories—like, if you get the sugar-free, like a little box, the whole box—only 40 calories!"* In contrast, a few educated, elderly women specifically associated dairy foods with high kilocalories during focus group discussions. Eddy (1997) reported that this influenced elderly women's dairy food consumption to exclude high kilocalorie foods (i.e., cheese).

Three women from the JMU group indicated on the questionnaire that they followed low kilocalorie diets, as did 2 women from the UVA and 1 woman from the VT groups. These findings indicate to the researcher that women may restrict kilocalories in their diets as a means of weight control. Chapman et al. (1995) reported significant differences in the attitudes of women (ages 22-85 years old) who had calcium intakes less

than 60% of the RDA and those who had greater than 60% of the RDA for calcium. The increased calcium group was found to be more likely to limit caloric intake due to weight control. A significant increase in cottage cheese, milk, and yogurt consumption was found when women limited caloric intake due to weight control. In comparison, many women in this study reported consuming milk (13) and yogurt (9) from the *How Much Dairy Did You Eat Yesterday?* checklist (Table 5). In particular, the women from the JMU focus group comprised almost half of women who consumed cottage cheese (2 of the 5). Frozen yogurt consumption was highest among the WM and JMU focus groups (3 women each). The concern over kilocalories is discussed in more details in terms of the media's influence on college women's food choices.

Lactose Intolerance

Approximately 25% of the U.S. population, and 75% of adults worldwide are reported to be lactose maldigesters or have low lactase levels. The prevalence of this condition among non-Hispanic whites is about 15% (McBean and Miller, 1998). In each focus group, except for the VT group, there was at least one woman who mentioned lactose intolerance in terms of "digestive problems". In all cases, this issue was brought up during the discussion of disadvantages of dairy foods with comments, such as: *"Sometimes it gives me an upset stomach;" "Yeah, it gives me digestive problems;"* and *"It makes your stomach hurt."* The issue of lactose intolerance was only alluded to with women describing the symptoms they experienced. Women did not mention lactose intolerance or the use of any lactose-reduced products for that reason. Eddy (1997) found that elderly women were confused about lactose intolerance, describing it as a milk allergy. These women discussed Lactaid®, unlike college women, which suggested that the elderly women were actually lactose intolerant.

Bacteria found in cultured dairy foods such as acidolphilus milk and yogurt were discussed as advantages of eating dairy foods, as illustrated by the following: *"Oh, my parents used to buy that acidolphilus milk, and so…I haven't seen it here. I think it's hard to find";* and *"Aren't the enzymes in yogurt good for you or something?"* This led the researcher to believe that women did feel those bacteria were good for them, but

women were unsure of what the benefits were. Acidolphilus milk is a nonfermented beverage made with viable *L. acidolphilus* strains added to cold milk containing starter cultures. In yogurt making, the starter cultures *Lactobacillus bulgaricus* and S*treptococcus thermophilus* are incubated with fresh milk to which milk solids have been added. *L. acidolphilus* is later added to the yogurt starter culture (Miller et al., 1995). Improved lactose digestion is among the several health benefits attributed to lactic acid bacteria, such as *L. acidolphilus* (Gilliland, 1989).

Other Health Perceptions

Though it was not a predominant theme, it was interesting that only one woman from the UVA group who reported following a vegetarian diet mentioned that protein was an advantage of dairy foods saying, *"I eat cottage cheese because it has a lot of protein in it, since I don't eat meat. I have to find it in other places, so—really the only thing I have is cottage cheese and skim milk."* It was surprising that other women, especially those who indicated they consumed a vegetarian diet (4 of 28) on the socio-demographic questionnaire (Table 3), did not mention protein from dairy foods. For women who exclude meat from their diets, it is important for them to find other protein-rich foods.

There was one woman in the UVA and one woman in the VT focus groups who had overall negative perceptions about dairy foods, as they commented, *"Like nothing on [the dairy list] is really healthy. Like you can't say anything except skim milk and a skim milk milkshake";* and *"I don't like dairy that much. I don't think it's that great for you to eat a lot of it."* These comments were discussed as disadvantages of dairy foods and suggested to the researcher that these women may be unaware of nutrients in dairy foods including calcium, protein, phosphorus, vitamin D, and magnesium.

External Influences on Dairy Food Consumption

The personal food choices made by college women were affected by many external influences. The food choice model proposed by Shepherd (1985) is one model that is pertinent to understanding who/what influenced women's food choices. In this model, influencing factors were categorized as related to food, the person making the

decision, and to the external economic and social environment within which choices are made, but many of the factors are mediated by people's beliefs and attitudes. Sensory preferences and beliefs concerning nutritional quality and health effects of a food may all be more important than the actual nutritional quality and health consequences in determining a person's choice.

Another food choice model relevant to college women's food choices is that of Fishbein and Ajzen's "theory of reasoned action" (1975), which seeks to explain rational behavior that is under the control of the individual. A subjective norm reflects perceived pressure from certain people or groups and the person's motivation to comply with the people or groups. Living away from home, young adults are now responsible for making their own food choices, no longer relying on their parents' control (Seymour et al., 1997). The importance of different factors affecting college women's dairy food choices are explained in this section. Women's references to family influences on dairy food choices included their mother, father, and then their family (in general), including references to parents, siblings, and family food behaviors.

Mother's Influence

Throughout focus group discussions women mentioned their mothers as a predominant influence on their dairy food consumption. This influence was discussed in relation to women's dairy food consumption as a child and the changes made over the years, especially since leaving home to attend college. One woman from the UVA focus group mentioned she did not drink milk often as a child because her mother was allergic to milk, and therefore, did not buy it. This suggested to the researcher that the availability of milk at home was limited by her mother, and this in turn affected milk consumption. Other women mentioned how their mothers had influenced the kinds of dairy foods that they ate, as noted in the following: *"My mom has made yogurt all our lives, so I've always eaten a lot of yogurt";* and

> *"My mother used to make me drink two glasses of vitamin D milk for dinner. Like, I could never have Kool-Aid®. That was all I ever drank, vitamin D milk, whole milk—gross. But then as I got older, even because I had older brothers and sisters—they could drink, like, the 2%, but I was always very, very thin as a*

> *child so she always made me drink—up until I was in junior high—I had to drink that kind of milk, and now I drink skim."*

These comments indicated to the researcher that mothers encouraged women to eat dairy foods while growing up at home. There was also no mention by women of their mothers discouraging them to eat certain dairy foods. Throughout the discussion of all family influences, milk was the predominant dairy food mentioned, especially with women changing from a higher fat to a lower fat version.

One woman from the VT focus group spoke of her mother's influence on the types of foods made available to her at home with the comment, *"Alfredo, my mom didn't make it, so she never told us it was a food. My mom didn't know how to make alfredo sauce, so we never had it; so I didn't know about it until I came to college."* This indicated to the researcher that this food was not eaten at home because her mother did not prepare it. However, after coming to college, this woman tried it, and now chooses to eat it at school. This suggests that these women, no longer directly affected by their mothers' influences, have chosen to retain or change the types of dairy foods they consume to suit their personal food preferences.

Women also indicated that their mothers' dairy food choices would influence their dairy food choices when they reached their mother's age. Women explained, *"[I'll eat], like, half a bowl of cottage cheese, because my mom just has, like, cottage cheese and fruit,"* and

> *"I think I'll eat more cottage cheese, I don't know why, but I just see that in my future just because my mom eats a lot of cottage cheese. And I used to hate it when I was little, but gradually I'm starting to, like, like it, and I don't know right now if I like it cause the taste of it or if I like it just cause I know that, like, I like it."*

It was interesting how cottage cheese was associated as a dairy food that was healthy and that would be eaten at an older age.

The other major area in which college women's mothers seemed to have an influence was supplement use, which is illustrated by the following: *"I take [supplements], but I just need it cause, like, my mom's like, 'Have your multivitamin and your calcium and magnesium vitamin'"; "I hate to swallow huge pills and that's what the calcium supplements my mom always tried to make me take are—really huge pills. And I just don't like them, so I can chew Tums®";* and *"My mom sends [calcium supplements] to me, and I willingly take them. So it works out—I get the calcium and it's her peace of mind."* Another woman from the JMU focus group explained she only took supplements when she was at home, because her mother reminded her. These comments suggest women took supplements primarily due to their mothers' recommendations.

Overall, the college women's mothers seemed to be a positive influence on women's dairy food choices, encouraging women to eat dairy foods, such as milk and yogurt. Mothers seemed to impress upon the women the importance of calcium and other nutrients, especially in terms of supplementation. Mothers were discussed as an influence separate from family influences, since their food behaviors were predominantly mentioned and discussed, for the most part, as health-oriented influences that have played a role in college women's choices of dairy foods.

Family Influences

Father's Influence

One finding that was interesting was that a few women mentioned that their fathers became very "health conscious" during their childhood, thereby influencing the family to make low fat dairy food choices. However, the father's influence on college women's dairy food choices was not as predominant as the mother's. Two women from the VT focus group made the following comments about their fathers, *"I grew up on 2% and then I switched to 1%, and my dad drinks skim; but I can't go down there. It's too watered down."* This woman indicated that she has chosen not to completely follow her father's food behavior. The other women commented,

> *"I grew up on 2%, but then my dad got real health conscious, and my sister did, too, so then they would get 1% and my mom and I'd drink 2%. I could not switch, though, because it was like water. And then they switched to skim and there was, like, 3 different kinds of milk in the refrigerator because everyone drank one different. And then they stopped buying it all together, stopped buying 2%, so I didn't have a choice, and now I will not go back to 2%."*

This woman specifically stated she did not really have a choice in her decision to change to skim milk, but now that she has, she continues to drink it. On the other hand, not all fathers appeared to be "health conscious," which also influenced the availability of dairy foods in the home, specifically milk. This is illustrated by the comment, *"I don't like whole milk. I only have whole milk at home, because that's what my dad drinks, but I don't drink it here. I drink 1%."*

Other Family Influences

Women discussed "other family influences" on dairy food choices in terms of foods they consumed regularly or seldomly. One woman from the UVA focus group gave the following explanation for drinking whole milk, *"I grew up drinking [whole milk]. It tastes like cream. We just grew up drinking it."* This practice was one that she had acquired from her family and continued when living away from home. Another woman in the JMU group gave the following reason for why she felt that milk "doesn't go with dinner": *"Some people, like, when they were little had milk with dinner, and I think that's why a lot of people do it. I mean, my family always drank tea."* This is another illustration of a family practice that was retained when making food choices independently. These two examples also allude to the issue of availability of dairy foods to college women while living at home. The option of choosing certain kinds of dairy foods may not have been available to these women; therefore, they followed the same food behaviors as their parents and other family members. In relation to eating out, one woman from the WM group commented, *"After dinner we usually have—if I go out with my family—we always have coffee and we have milk in that."*

College women discussed the influence of their family on food choices during discussion of the dairy food changes they had made from childhood. This discussion

related to fat in dairy foods. Women offered different reasons regarding how their families had influenced their dairy food consumption as a child. Reasons included the following: *"I grew up on whole milk and since I've been to college, now I can drink, like, ½% milk. I drink a lot more now than I did as a child, because my brother and sister were allergic, so we never had a lot of milk";* and *"…eating ice cream every night, so I don't really eat it now unless I'm at home, and then I'll eat it. Just the fat's something I grew up with."* Availability of lower fat dairy foods seemed to be an issue with women when they lived at home. It also seemed that college women have retained the habit of consuming particular dairy foods, especially milk, but modified these habits to fit their personal health goals or food choice preferences. These modifications seemed to be lower fat dairy choices.

Family influence played a minor role in terms of what kinds of food choices the women would make at their mother's age. However, it was important to note that one woman from the JMU group expressed concern over a particular practice of her parents. She explained, "*My parents don't drink milk anymore. I don't know why, but people that I know that are old don't drink milk anymore."* This response seems to indicate that the woman questioned whether she would choose to follow her parent's practice. She went on to ask the researcher if not drinking milk would increase her risk for developing osteoporosis.

The findings that mothers and family members (in general) were major influences on college women's dairy food choices contrasts with findings reported by Eddy (1997) concerning influences on elderly women's dairy food choices. Eddy (1997) reported that the predominant influence on educated elderly women's dairy food consumption was their physicians. Fifty percent of the elderly women were on modified diets (i.e., lower fat, cholesterol, and low sodium) as prescribed by physicians. When asked what would influence elderly women to make changes in food intake, women most often cited their physicians. College women were not influenced by physicians to make changes in their food intake. College women would not be expected to be influenced by a physician since

they are too young to experience many chronic diseases that impose dietary restrictions discussed by the elderly women. The one exception was the woman from the WM focus group, previously mentioned in the section about osteoporosis, who worked with doctors in the rheumatology department at a hospital. The majority of elderly women were also single or widowed; therefore, the influence of family was not a current issue to them in making food choices.

College Lifestyle

College lifestyle influenced dairy food choices of the women in this study. Important lifestyle factors included health concerns as well as the resources of time and money. In a study of how young adults viewed foods, Betts et al. (1997) also found that time constraints, lack of money, and health concerns influenced the food intake of college and non-college adults (ages 18-24 years). Women in the focus groups first discussed these factors during the *Introductory Ranking Activity* in which they ranked ordered factors (taste good, healthy, inexpensive, and convenient) important to their food choices. Women then elaborated on what these factors meant to them throughout the discussions.

Women talked about "healthy" in terms of daily food decisions at school. Women explained that "healthy" was important to them with comments such as: *"It kind of depends, like, it changes every—it changes a lot for me. Like, it depends on the day I feel like eating healthy"; "I just, I'm really conscious about what I put in my body, but that does include like a ration of chocolate and ice cream everyday";* and *" I put healthy first, because I'm obsessive about how healthy my food is. I can't eat something if I don't think it's healthy, no matter what it is."* These explanations suggested to the researcher that women tended to be "health conscious," but this attitude varied in their lives from day to day.

Some women discussed previous experiences at college with eating "junk" foods. Women explained, *"I know if I eat crappy food, I start feeling—getting tired and sick and not feeling overall well"; "Healthy as second, because freshman year (I ate all junk)…just a shock to my body. I'm trying to work on that";* and *"I put healthy for #1*

because, like, one day last year it was my freshman year and I just ate crap, crap all the time, and it caught up to me." These responses indicated to the researcher that the women have modified their food behaviors while at school, and these changes were independent of family influences.

"Healthy" also seemed to be important to the women when choosing dairy foods. As discussed previously in the section on fat, women thought some dairy foods were high in fat; women felt this was a disadvantage of dairy foods. A few women discussed changes they had made, while in college, in dairy food choices because of fat. For example, one woman explained, *"Since I've been to college, [my roommate] has been the one to get me to decrease my percentages of milk,"* and another stated, *"I couldn't drink milk products, like I couldn't stand to drink milk. I hated cheese…all that stuff…macaroni and cheese. What influenced…? I don't know. I came to college and started eating it."* Eddy (1997) reported that educated elderly women felt that "good for me" was a factor important to their dairy food choices; however, the women discussed "good for me" in relation to chronic diseases or health conditions that they had. In contrast, the college-age women in this study seemed to discuss "healthy" in terms of fat, body weight, and body image.

Cost was important to some women when making food choices. In this section, cost is discussed in terms of the women's financial situations at college. Expense in terms of product cost is discussed later in the section on product characteristics. When women had meal plans, "inexpensive" did not seem to be an important factor in making food choices. This was evident in the following remarks: *"For expensive, I put 4, because it really doesn't matter here, because most of us are on a meal plan. Mom and Dad pay for it"; "Inexpensive as #4 because my parents give me money";* and *"Inexpensive, like, well I don't know if this counts, but meal plans or not—I don't have to worry about it, because it's already paid for…"*. These comments suggested to the researcher that women who relied on their parents for financial support did not seem to be concerned with the cost of foods.

Cost seemed to be important to those women who did not have a meal plan or lived off campus. Many women offered explanations such as, *"Inexpensive (1st) because I'm a poor college student"; "Inexpensive (3rd), just because I don't have a meal plan so I have to very much watch how much I spend";* and *"Inexpensive (2nd) because I don't make a very big salary where I work."* These comments suggested that some women were responsible for their college finances and do not rely on their parents for support. Koszewski and Kuo (1996) reported that college women's ability to obtain food at a good value affected the adequacy of the diet of college females. Eddy (1997) reported that cost was not a major influence on elderly women's food choices, as no elderly women in that study had low incomes.

It was also interesting to note that many women reported that they "ate out" frequently. Many women indicated eating out "about once a week" (11 of 28) and "more than once a week" (7 of 28) on the socio-demographic questionnaire (Table 3). Hertzler and Frary (1992) reported that 45% of the college students that they surveyed ate at fast-food locations at least weekly. Common reasons for eating out included "easily accessible," "to eat foods I can't prepare," "to save planning, buying, preparing, and cleaning up," and "less expensive."

A few women discussed the types of dairy foods they eat at restaurants, and these choices were different from what women reported choosing when eating out with their families. Differences were evident in remarks such as, *"Yeah, generally when we (roommates) eat out, we either eat Mexican or Italian,"* and *" I always order milk when I go to lunch (at school), or if we go to Denny's to study, I'll always order it."* This indicated to the researcher that peers also influenced the women's food choices.

Fat was also a concern to women in terms of what restaurants and dining halls had to offer them. Women felt that the fat content of dairy foods and foods with dairy in them were too high. During discussions of foods in restaurants and dining halls, the same

women commented, *"Well, sometimes I've noticed sometimes, just the eating places on campus, that they put extra oil in the food that already has dairy products in it, and I don't think that that's necessary, like, I think that's very unhealthful"; "Like when restaurants served dessert, they would offer, like if they made milkshakes, they'd offer whole and skim";* and

> *"It doesn't seem like you can really get a healthy balance of cheeses. Like if you want something cheesy, there's a lot of cheese, and then if you, and then you have to go either way. Like you can't get a little, a dash of cheese on the side—like it's nachos with so much."*

This concern is important to note since many women (16 of 28) (Table 3) had meal plans, especially those living on campus (9). This led the researcher to believe that women were not satisfied with the options in dining halls or restaurants and that there might be a need for more low-fat choices in these types of food establishments. Hertzler and Frary (1992) reported, in a study of "eating out" practices of college students, that women tended to purchase more salads, choose reduced portions, and follow practices consistent with dietary guidelines compared with men.

Women seemed to be more satisfied with dairy food options in the grocery stores. In fact, women commented on the many low fat options available, as some women explained: *"Like yogurt, you can get in fat free,"* and *"You can get non fat ice cream, too."*. However, women did not always find these low fat options to be satisfactory, as one woman responded to the non fat ice cream suggestion, *"I don't like the taste of it. I need the fat."* The emphasis on fat could be due to many factors and is discussed further in the next section on media influences affecting college women's food choices.

Media Influences

The media influenced the women's perceptions of dairy food. Women were asked during the focus groups to discuss some of the advertisements about dairy foods, and they mentioned numerous ads and slogans. The following are some examples: *"Milk—it does a body good," "That milk mustache," "Cheese commercials—'Cheese to the rescue',"*

and *"Got Milk?"* One woman in the UVA focus group asked who sponsored the dairy commercials and another women replied, *"American Dairy Farmers."*

Women had different feelings towards the various dairy food advertisements. A few women thought they were "funny," as one woman explained, *"Gets your attention, just cause they're funny…and people tend to remember humorous commercials versus the serious, monotone ones."* Other remarks included, *"I used to love the ones with the little scrawny kids that grew up and got to be strong,"* and *"I think they're creative, like the reasons that each person drinks milk, like the little kid from 'Jerry McGuire'. Like, I think they're eye-catching because everyone knows the people, and the explanations of why to drink milk is good stuff."* Other women did not like some of the ads, specifically the milk mustache campaign. They explained, *"I hate those milk things—the milk mustache. It's so ugly, like, some people it looks good on, but some, it's like, horrible. It's like, the milk is hot. It makes you just not want to drink milk";* and

> *"I don't like those ones with the milk mustache. Yeah, it doesn't look real. Like, that's not what kind of milk mustache you get. I just don't think, like some of them who had milk and they were drinking it. It's just like they're standing there. It doesn't make me want to drink milk, like, it's not a realistic thing, the mustache."*

These responses indicated to the researcher that the women had paid attention to the milk mustache ads, even if they did not like them. During the discussion, one woman from the WM group mentioned this, as she commented:

> *"I mean, people seem to respond to them really well. Like, people, like they definitely catch your attention, and I've seen a lot of them on people's doors. I mean, I know it's because of the celebrities that are on them, but that means that they see it and paid attention to it, and whether or not you like it, you remember it, so…"*

Another woman from the UVA focus group expressed concern over the target audience and the message of these dairy ads. She remarked,

> *"…But they never made me want to drink more milk. I think they're funny commercials to watch, but maybe this is coming from an educational setting, but I wish they would say more why we should drink more milk. I know for some*

people that wouldn't work for them, but to target our age, I think you have to tell us why we need to drink milk."

Throughout the focus group discussions in this study, milk was the predominant dairy food mentioned by the women. One reason for the emphasis on milk could be that many advertisements focus on milk, or at least those advertisements that the women seemed to remember.

Other indications that the media influenced college women's dairy food choices pertain to women's concern about fat and kilocalories in dairy foods. Women's concerns about fat could be related to the desire to lose weight and could be influenced by the media's promotion of fat reduction as a means of weight loss. It could also be due to the media's promotion of the "super model" image for women as seen in magazines and on television. This image is what many young women might strive for to be accepted by society as attractive. However, it may cause these women to compromise their nutritional health in the process. Excessive weight preoccupation is a public health concern, as excessive and unhealthy dieting have been shown to be associated with a number of consequences, such as poor eating habits and nutritional intake, binge eating, and future difficulties in weight loss as a result of weight cycling. A comparison of weight-preoccupied women and those with anorexia nervosa revealed similarities in body dissatisfaction, drive for thinness, and perfectionism scores on the Eating Disorders Inventory (Neumark-Sztainer, 1995).

Both media and peers pressure young adults to be thin, at any cost, often in an environment unsupportive of regular or healthy eating patterns (Seymour et al., 1997). The idea of thinness being promoted by the media is reinforced by one woman's comment regarding the types of dairy food advertisements,

"They're directed to the women audience, like, 'oh, we'll drink skim and we'll be fine,' it's just that weird, assuming that we're all really concerned about fat. I just don't really like the messages that some of them—it's the 'Got Milk?' ones that have the models on them…"

Contento et al. (1995) studied the relationship of weight and dieting status to what adolescents (ages 11-18 years) valued or wanted in the food they ate, and the importance of personal and social-environmental criteria used to choose foods. Findings suggested that particular foods and food consumption patterns (i.e. low fat and low kilocalorie) that promote thinness may also be those that promote health in the sense of disease prevention. The concern over kilocalories also relates to the media's emphasis on "body image" and the desire for thinness.

In the study of educated elderly women's perceptions of dairy foods, Eddy (1997) reported that elderly women received nutrition and health information from seminars and newspaper and magazine articles on research. Elderly women did not discuss dairy food advertisements.

With recent outbreaks of *E. coli* and salmonella in food establishments reported in the media, college women were aware of food safety and discussed the safety of milk served in restaurants. Several women said they did not order milk at restaurants because they were unsure of the restaurant's food handling practices. They offered the following reasons: *"It's scary to think how long it's been sitting out,"* and *"If it's in little cartons, then I'll get it, but not if they bring you a little cup of it."*

Women had negative feelings regarding the use of food additives in dairy foods. They offered explanations such as: *I don't think you should mess with food. I mean, like, putting chemicals and stuff to make [dairy foods] less fatty or breeding cows, I don't know what they do, but I just don't think that—that should be done. Like, I think things should be natural…"; "Like, people shouldn't thicken the milk just because people like thick milk without the fat";* and *"…[Dairy food] has all those preservatives. I'm sure it is doing worse stuff to me. There's real benefits to the calcium; they're probably taking away from it."* This indicated to the researcher that women disapproved of the use of additives in dairy foods. On the other hand, though, women also previously indicated the desire for low fat products. This suggests that women do not understand that the removal

of fat during the development of lower fat dairy products also removes some of the desirable characteristics that fat imparts to foods, including taste and texture. To replace these sensory characteristics, other ingredients such as food additives are used during product development. This is an area that the food industry is working to improve.