RESEARCH-BASED EVIDENCE SUPPORTING SECONDARY FOOD AND NUTRITION PROGRAM EFFECTIVENESS

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This paper reports findings from a literature review that identified research-based support for secondary-level family and consumer sciences (FCS) food and nutrition programs in U.S. Public Schools. No research was revealed in this review to substantiate the efficacy of these programs. Possible consequences of these findings for secondary FCS programs are discussed. Recommendations include 1) research with secondary FCS students; 2) national research related to the impact of FCS programs; 3) involvement of FCS professionals in the development and implementation of school nutrition and wellness programs; 4) establishment of a central database to house research related to secondary FCS programs; and 5) coordination of an effort to standardize key words for use by FCS professionals when reporting and cataloging research.

Obesity has reached epidemic proportions in the United States (Center for Disease Control and Prevention, 2005; Cotten, Stanton, & Zolten, 2004; U.S. Department of Agriculture, 2005). It is assumed that food and nutrition classes, central to secondary-level (Grades 6-12) family and consumer sciences (FCS) programs, include obesity and related topics as part of the curriculum. It is also assumed that these classes are making a difference in the lives of students who participate in them. What research-based support exists to substantiate these assumptions? The purpose of this investigation was to identify research-based evidence that food and nutrition classes in FCS secondary programs are making a positive difference in regard to the obesity epidemic. Such data are necessary in an era of accountability associated with the *No Child Left Behind Act of 2001* (NCLBA). What does the research reveal regarding the impact of secondary-level FCS food and nutrition programs on students in connection with the obesity epidemic?

Background

The quest to identify research-based support for secondary FCS food and nutrition programs' impact on students in connection with the obesity epidemic emerged from the *Study of the Effectiveness of Public School Family and Consumer Sciences Programs* (2004) conducted by a team of researchers in FCS Education and Studies at the Iowa State University (ISU) (Gentzler, Hausafus, Browne & Myers, 2004) with support from the American Association of

Family and Consumer Sciences (AAFCS)[1]. The 2004 study examined published and unpublished research literature available from 196 secondary FCS programs in the United States from 1985 to the end of May 2004 to (1) substantiate the effectiveness of the delivery of FCS content and (2) provide support for the roles these programs have played in connection with initiatives linked to the NCLBA (2001). Three hundred and ninety-six entries including 79 dissertations, 178 master's theses, 78 journal articles, 38 research presentations and 23 research reports were included in the 2004 dataset. Summaries of these data are available on the website developed in connection with this project, *Family and consumer sciences education: Effectiveness of secondary programs* (available February 7, 2006, at http://www.aeshm.hs.iastate.edu/fceds/effectiveness/).

Research Methods

This research included data from the 2004 study as well as an additional review of documents through May 31, 2005 listed on *ProQuest*'s online databases and the online library catalogs for 60 universities with FCS programs[2] to identify research conducted in connection with secondary FCS programs related to obesity. Databases were examined to locate research using the following keywords: obesity, eating disorders (anorexia and bulimia nervosa), weight control, dietary guidelines, food guide pyramid, nutrition education and adolescents. Secondary-level FCS standards available for 35 states, six nutrition and seven comprehensive FCS texts from two FCS textbook publishers[3] were also reviewed to ascertain the inclusion of the topics identified in the aforementioned keyword search.

Findings

Research Related to Obesity in the 2004 Dataset

Although the FCS content area of food, nutrition and wellness provided the most listings (45) in the 2004 study (Gentzler, Hausafus, Browne, & Myers, 2004), none of the studies identified in this dataset focused specifically on obesity as a health concern among secondary FCS students. Notwithstanding this fact, what does the identified research reveal regarding the examination of topics related to obesity such as eating disorders (including anorexia and bulimia nervosa), weight control, dietary guidelines, the food guide pyramid, nutrition education and adolescents?

Three of the 45 studies identified in the 2004 study included topics associated with obesity. Floyd (2003) assessed "the relationship of body mass index [BMI] levels, nutritional knowledge, selected food habits, influences that affect food choices, and nutrition education" among 59 high school students (Grades 9-12) who had participated in nutrition classes (p. ix). Only 14 students in Floyd's (2003) sample had participated in FCS-based nutrition classes. A

[1] For discussion of the 2004 study see Browne, L., Gentzler,Y., Myers, L. & Hausafus, C. (2006, January). Effectiveness of Secondary Family and Consumer Sciences Programs (1985-2004). *Journal of Family and Consumer Sciences, 98* (1), 26-32.

[2] Each state in the United States was represented in this search.

[3] Texts analyzed in this investigation include *Discovering Food and Nutrition* (2005), *Nutrition and Wellness* (2004), *Food for Today* (2006), *Discovering Life Skills* (2004), *Today's Teen* (2004), *Creative Living Skills* (2006), *Guide to Good Food* (2004), *Adventures in Food and Nutrition* (2003), *Nutrition, Food and Fitness* (2004), *Building Life Skills* (2003), *Skills for Personal and Family Living* (2004), *Goals for Living* (2006), and *Take Charge of Your Life* (2004).

relationship between students' BMI and participation in nutrition classes was not established in this study.

One study in the 2004 dataset focused on the topic of eating disorders. Nagel-Murray's (1989) survey research was conducted with teachers' to determine if previous academic experiences with and understanding of eating disorders influenced whether topics related to eating disorders were included in their classes and whether they would seek help for a student with an eating disorder.

The final study in the 2004 dataset related to obesity was conducted by Stuhldreher, Zuchowski and Liddel (1996) with 355 FCS teachers in West Virginia. This research examined the extent to which the United States' Dietary Guidelines were incorporated into the curriculum as well the adequacy of teachers' preparation to implement the guidelines in the classroom. The two guidelines most consistently included by teachers related to the importance of eating a variety of foods and choosing plenty of vegetables, fruits and grains. The adequacy of teachers' "educational preparation to promote dietary guidelines was positively correlated with ease of implementation" (1996, p. 3) in this research.

Research Related to Obesity: Moving Beyond the 2004 Dataset

Recognizing that very little research was available related to secondary FCS programs' impact on obesity in the 2004 dataset, the authors wondered what they might have missed in their initial review of 20 years of the literature. What support for secondary FCS teachers' involvement with the obesity epidemic existed? The authors revisited online library catalogs, Iowa State's online research listings, and *ProQuest's* dissertation and master's thesis database to update the dataset through May 31, 2005. Searches in *ProQuest* yielded 17 studies using the aforementioned keyword searches. Research was identified in *ProQuest* related to obesity and adolescents in schools, but none of these studies could be tied to secondary FCS programs.

When online library catalogs and indices were reviewed, only nine titles for studies were found that focused on obesity-related topics with adolescents. Although these studies were identified, none of these listings included research abstracts and no evidence was provided of any specific connection between secondary FCS classrooms and these studies. Although no additional research studies were identified, the review revealed a report from the U.S. Food and Nutrition Board titled, *Preventing Childhood Obesity: Health in the Balance* (Kaplan, Liverman, & Kraak, 2005). Chapter 7 in the report outlined how schools were addressing the issue of obesity. Upon review, however, the section on classroom initiatives related to obesity focused solely on health education and did not include FCS as a participant in nutrition and wellness programs. This raised concern because the report was available in all of the online catalogs reviewed and was available online from the National Academies Press.

An updated review of FCS-related journals did not uncover any additional research related obesity study and emphasis in secondary FCS programs. The April 2005 issue of the *Journal of Family and Consumer Sciences* included several research studies and professional practices addressing obesity (Ames, & Farrell, 2005; Dart, Frable, Bae, & Singh, 2005; Little, Howell, & Williams, 2005). However, none of this research focused on secondary FCS programs or students. Two studies were located in the *Family and Consumer Sciences Research Journal* (Lokken, Worthy, & Trautmann, 2004; Shankar, Dilworth, & Cone, 2004) but these were conducted with college-age students rather than secondary-level students.

Because secondary educators exist within a climate of accountability related to student performance and standards are often used to evaluate students, online standards available for 35 states were investigated to determine the number of states that included obesity and related topics

in their standards. Figure 1 indicates that six states included the topic of obesity in their standards. Nine states also included the topic of weight control, and 16 included the topic of eating disorders in their standards.

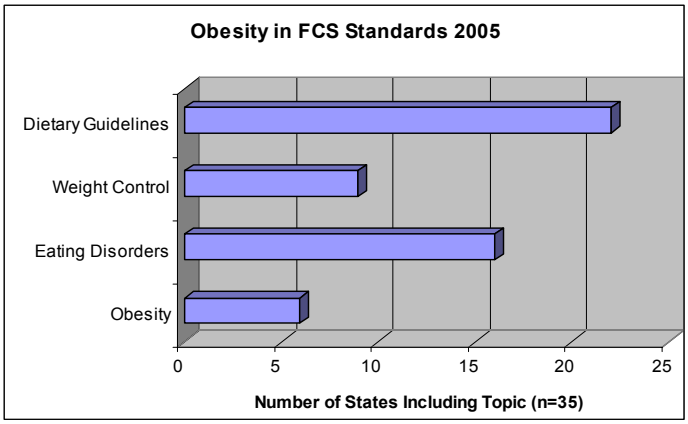

Figure 1: Obesity-related Topics in FCS Standards (2005)

The word obesity was not mentioned in the *National Standards for Family and Consumer Sciences* (National Association of State Administrators for Family and Consumer Sciences, 1998). The national standards, as well as standards for the 22 states reviewed, included the dietary guidelines. The *Dietary Guidelines for Americans* (U.S. Department of Agriculture, 2005) focused largely on obesity, weight management and related issues. Consequently one might assume that obesity and related concerns would be addressed in FCS classrooms in states that reference the dietary guidelines. However, no research-based evidence existed that any of these topics have been or are being taught in FCS classrooms. Further, even if obesity-related topics are being taught, no literature exists to document the effectiveness of the programs in students' lives.

The final resource reviewed to identify possible connections between secondary FCS classrooms and obesity was secondary-level nutrition textbooks. The table of contents for the latest editions of six nutrition and seven comprehensive FCS texts (*Discovering Food and Nutrition*, Kowtaluk, 2005; *Nutrition and Wellness*, Duyff & Hasler, 2004; *Food for Today,* Kowtaluk, 2006; *Discovering Life Skills,* Glencoe McGraw Hill, 2004; *Today's Teen*, Kelly-Plate & Eubanks, 2004; *Creative Living Skills*, Couch, Felstehausen, & Clark, 2006; *Guide to Good Food,* Largen & Bence, 2004; *Adventures in Food and Nutrition,* Byrd-Bredbenner, 2003; *Nutrition, Food and Fitness*, West, 2004; *Building Life Skills,* Liddell & Gentzler, 2003; *Skills for Personal and Family Living*, Parnell, 2004; *Goals for Living,* Wehlage & Larson-Kennedy, 2006; and *Take Charge of Your Life*, Ross & Owens-Kristenson, 2004) from two publishers were analyzed. Figure 2 illustrates the number of textbooks examined in this review that devote chapters to obesity-related topics. Goodheart Willcox's *Nutrition, Food, and Fitness* (2004) included a specific chapter for each of the four topics. Glencoe's *Nutrition & Wellness* (2004) addressed three of the four topics. Given these findings, the possibility that obesity-related topics could be examined in classrooms using reviewed textbooks exists. However, no research is available to substantiate this possibility as a reality.

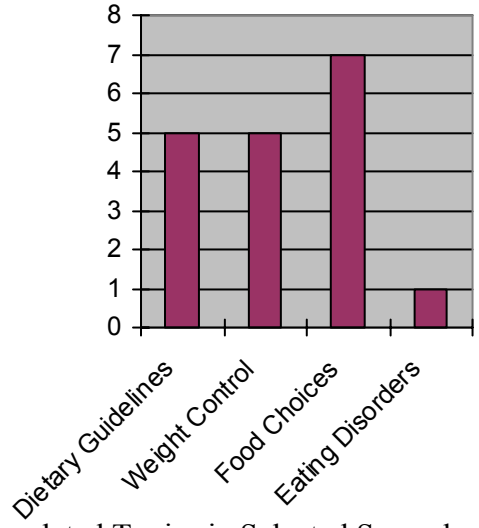

Figure 2: Obesity-related Topics in Selected Secondary FCS Textbooks

Conclusion

The purpose of this research was to identify research-based evidence that secondary-level FCS food and nutrition courses are effective in the lives of students at the secondary level. Limited evidence to support this claim is provided in this review. This conclusion is made based on (1) minimal, if any, available research; (2) research conducted with small sample sizes and, at best, conducted on a regional basis; and (3) FCS standards that rarely mention obesity. Although available secondary textbooks have sections related to obesity, there is no evidence that these topics are taught. If obesity issues are taught, there is no evidence that they are taught effectively. This conclusion is similar to one associated with the study by Gentzler, Hausafus, Browne and Myers (2004) wherein research to support secondary-level FCS programs, generally, was sought and limited evidence was identified.

What are some possible consequences for FCS secondary programs if little or no research-based evidence supports program effectiveness? Some may not be aware that FCS programs exist. Others may conclude that secondary FCS food and nutrition programs are ineffective—believing no research is available to prove otherwise. And others may not believe, given limited research-based evidence to the contrary, that secondary-level programs are worthy of funding.

As previously noted, the *Preventing Childhood Obesity* report (Kaplan, Liverman, & Kraak, 2005) does not mention FCS programs as contributors to obesity prevention programs. This omission may be warranted if FCS programs are not responding to the obesity epidemic. However, FCS programs have been omitted from, or hidden within, previous national reviews of national nutrition programs, notably a 1996 report, *Nutrition Education in Public Elementary and Secondary Schools* (Celebuski, Ferris & Carpenter, 1996). FCS secondary-level programs contributions are not mentioned in the report's executive summary, although these programs' contributions are mentioned[4] within the body of the report (Celebuski , Ferris & Carpenter,1996). The *Preventing Childhood Obesity* report (2005) indicated that 60 percent of states required students to complete health education courses. Few states require FCS-related courses—even

[4] FCS programs are referred to as "home economics" programs in this report.

though FCS courses may satisfy health, technology, and economics high school graduation requirements.

Recommendations

What should be done about the lack of research-based evidence available to support food and nutrition courses within secondary family and consumer sciences programs? Should FCS professionals, and FCS educators in particular, be concerned about the lack of evidence that validates the need for FCS food and nutrition programs at the secondary level? Could it be that the lack of evidence is a factor in FCS professionals' inability to validate program effectiveness, thereby keeping the curriculum as an elective in many schools nationwide? The authors recommend that:

1. FCS professionals gather data with present and former *students* related to secondary-level FCS programs documenting the impact of programs on student knowledge, attitudes and behaviors. Although research with students under the age of 18 may require parental permission, such research is done with students in other content areas. Such research should be achieved using a variety of methodologies and research strategies.
2. A national effort be initiated to evaluate secondary FCS students' performance related to basic competencies in the FCS content areas of food, nutrition and wellness; textiles, clothing and apparel; child, family and human development; career education and housing and interior design.
3. In conjunction with the *Child Nutrition and WIC Reauthorization Act of* 2004, FCS professionals coordinate efforts with child nutrition program team members to promote and maintain nutrition and wellness in schools[5]. FCS teachers and programs can play a vital role in the development and implementation of these plans.
4. FCS teachers develop partnerships with Family Career and Community Leaders of America (FCCLA) chapters to encourage participation in *Student Body*, a national FCCLA peer education program designed to help young people learn to eat right, be fit, and make healthy choices (FCCLA, 2006). Research could be conducted with participating students to determine program impacts as previous research has demonstrated a positive impact related to involvement in extracurricular organizations for students.
5. A central database be established and maintained to store FCS secondary program effectiveness-related research. This database should describe research in secondary FCS programs and provide information regarding resources such as state contacts, state standards, state reports, lesson plans, and the like that are germane to these programs. Previous studies have emphasized the importance of having a central database. This database could build upon the information found on the *Family and Consumer Sciences: Effectiveness of Secondary Programs* website (available on February 1, 2006 at http://www.aeshm.hs.iastate.edu/fceds/effectiveness/).
6. FCS professional associations should appoint a task force to develop guidelines for key words so that researchers can locate research associated with secondary FCS programs in the databases. These descriptors are critical in locating and identifying relevant research.

[5] Information related to model nutrition and wellness programs in available from the National Alliance for Nutrition Activity, (n.d.)

Although most FCS educators can show that FCS secondary programs make a significant contribution to nutrition education of secondary students and their families, the research base to support this declaration was not revealed in this literature review.

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EXPLORING THE RELATIONSHIP OF FIRST-YEAR, FIRST-SEMESTER COLLEGE STUDENTS' MIND STYLES AND THEIR CONSUMER DECISION-MAKING STYLES

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The relationship between first-year, first-semester college students' mind styles and their consumer decision-making styles was investigated at a southeastern comprehensive public university. A significant relationship was found between the self-reported, dominant Gregorc mind style scores and one consumer decision-making style. Two instruments were administered: the Gregorc Style Delineator™ and the Consumer Styles Inventory. Although the results did not support multiple consumer decision-making styles as detected in earlier research (Sproles & Kendall, 1986, Sproles & Sproles, 1990), an exploratory factor analysis revealed one, overall consumer decision-making style, Recreational/Hedonistic, which suggested that these students tend to primarily shop to gain pleasure from the shopping experience.

Decision making involves a process of cognitive learning. Learning is a continuous process and decision making is conducted at all stages of life. Appropriate decision making involves logical steps: determining the problem, considering multiple alternatives, and choosing the best alternative based on the particular situation (Deacon & Firebaugh, 1975; Goldsmith, 1996). More importantly, learning is a function of the decision-making process (Sproles & Sproles, 1990) and learning involves how people perceive and process information, also known as cognition (Farnham-Diggory, 1992). Onkvisit and Shaw (1994) indicated that consumer cognitive learning involves a process of personal problem solving to make decisions.

Numerous studies have documented that students enter college as consumers but may lack basic knowledge and skills to make consumer decisions (Avard, Manton, English, & Walker, 2005; Consumer Federation of America, 2003). One study was conducted (Sproles & Sproles, 1990) that determined learning styles are related to a consumer's decision-making style. Since the Sproles and Sproles study was published, other studies have investigated the consumer decision-making styles of college students (Canabal, 2002; Mitchell & Bates, 1998). However, no additional studies have further investigated the relationship between styles of learning and consumer decision-making styles for college students, a topic about which educators lack sufficient information. Educators could use such knowledge as a tool to assist students in developing a more elaborate understanding of their consumer decision-making behavior and how it relates to the type of learner they are. Knowledge of the relationship of learning styles and consumer decision-making styles can be used simultaneously in curricula to develop appropriate insight into marketplace decisions.

The focus of the current study was to determine whether a relationship exists between beginning college students' self-reported mind styles (how a person perceives and processes information, Gregorc, 1982a) and their consumer decision-making styles. According to Gregorc (1982a), what is going on inside the mind is manifested in outside behaviors and is defined as the style of learning (Gregorc, 1982a). For the purposes of this study, learning styles will be defined as mind styles. To investigate this relationship, a purposive sample was targeted consisting of first-year, first-semester college students at a southeastern, comprehensive public university.

Literature Review

Although few studies have been conducted to investigate how college students learn and make consumer decisions, a review of the literature describes specific characteristics of mind styles, consumer decision-making styles, and college students' financial knowledge.

Consumer Decision Making

Decision making is an important life skill at all stages in life. More importantly, learning is a part of the decision-making process (Gregorc, 1982a; Sproles & Sproles, 1990). Appropriate decision making involves logical steps: determining the problem, considering multiple alternatives, and choosing the best alternative based on the particular situation (Deacon & Firebaugh, 1975; Goldsmith, 1996). Appropriate skills in decision making require abstract thinking (Baxter Magolda & Porterfield, 1988), which involves considering multiple alternatives. However, students may enter college without prior educational training in decision making.

Sproles and Sproles (1990) provided a tool for educators and financial counselors to assist consumers in making better decisions in the marketplace. The Consumer Decision-Making Styles Inventory (Sproles & Kendall, 1986) has been applied in studies of other adult cultural populations (Canabal, 2002; Walsh, Mitchell, & Hennig-Thurau, 2001). No further studies have investigated the relationship between learning styles and consumer decision-making styles, especially with American college students.

Students are consumers. Students currently have more spending power than in previous generations and become consumers at a much earlier age. One reason for this increasing consumerism is easy access to shopping. Television and other media marketers use advertising to influence purchase decisions of children and youth. College students are targeted because they are perceived as potential loyal customers both currently and in the future (Feldman, 1999; Speer, 1998).

However, many young people are approaching adulthood without an understanding of how they make consumer decisions. At the secondary level, personal finance education is implemented in few states. As of 2002, 31 states had personal finance standards recommended in existing secondary curricula, yet only 17 states mandated a personal finance course before high school graduation (National Council on Economic Education, 2003). Nationwide, educators, college administrators, and consumer advocates are concerned about college students' spending habits, easy access to credit cards, credit card debt, and lack of financial knowledge (Avard et. al., 2005; Braunstein & Welch, 2002; Hayhoe, Leach, & Turner, 1999; Norvilitis & Maria, 2002).

College students spend an average of $247 of discretionary income per month and typically purchase products related to leisure activities (Harris Interactive, 2004). They often spend more than they earn (Nick, 1997). A need for more education to assist students in

making better financial decisions has been identified (Avard et al., 2005; Braunstein & Welch, 2002; Hayhoe et al., 1999; Norvilitis & Maria, 2002). Sproles and Sproles (1990) found that consumers generally enter the marketplace with a variety of decision-making styles that influence purchase decisions. The study identified eight decision-making styles:

1. *Perfectionist, High-Quality Conscious:* A consumer has specific ideas about best quality products and consistently looks for these qualities.
2. *Brand Conscious, Price Equals Quality:* A consumer associates quality with higher-priced, national brands.
3. *Novelty-Fashion Conscious:* A consumer gains pleasure for seeking out the newest, most modern, and exciting product.
4. *Recreational /Hedonistic Shopping Conscious*: A consumer gains pleasure from the shopping experience.
5. *Price Conscious, Value-for-Money:* A consumer consistently searches for sales, bargains, and lower-priced products.
6. *Impulsive, Careless*: A consumer does not plan shopping trips and is not concerned about the amount of money spent.
7. *Confused by Overchoice*: A consumer is confused and overwhelmed with too much product information and/or too many product choices.
8. *Habitual, Brand-Loyal*: A consumer tends to consistently stick with the same brand of product (Sproles & Kendall, 1986).

Mind Styles

Gregorc (1982a; 2001) focuses on how people acquire and use knowledge through their perception and processing of information (also known as mind styles). *Perception* involves how the person perceives stimuli. *Ordering* involves the steps used to put information in order. Four possible mind styles (Gregorc, 1982a) exist:

- *Concrete Sequential (CS):* Perceive the concrete or physical world through the five senses, think in a very linear fashion, and have more difficulty considering multiple alternatives or solutions to questions or problems.
- *Abstract Sequential (AS):* Can easily grasp abstract concepts, enjoy a very structured classroom environment, prefer to work alone, and continuously consider multiple alternatives and are strong in problem-solving skills.
- *Concrete Random (CR):* Can more easily appreciate an unstructured learning environment, want to explore alternatives to questions and/or problems, appreciate hands-on learning activities, and can adapt well to both working independently and in group work settings.
- *Abstract Random (AR):* Are very aware of what is happening externally, prefer a very unstructured learning environment, do not respond well to a step-by-step, logical presentation, tend to think with their emotions, and prefer lots of group work, discussion, and time to reflect on the learning experience.

The original learning styles instrument used in Sproles and Sproles' (1990) study was an adaptation of Kolb's Learning Styles Inventory (1976), which was based on Kolb's Theory of Experiential Learning (1984), whereby prior experience impacts the learner's current experience. Kolb's original inventory was developed for adults only and Kendall and Sproles (1986) adapted the instrument for high school students. Likewise, Gregorc's research also

employed Kolb's Theory of Experiential Learning and applies exclusively to adults' mind styles.

College Students' Financial Knowledge

During beginning students' first year of college, many may be living away from home for the first time. With this newfound independence, they may need to make decisions about purchases that they have never made on their own (Speer, 1998). This transitional period may also include first-time decisions of acquiring credit cards or purchasing a car. Nick (1997) conducted a qualitative study of money management behaviors of traditional-aged freshmen, compared with college sophomores, and found that both groups usually spent more than they earned and rarely budgeted on a monthly basis. The American Savings Education Council (1999) found that only 20% of students (both high school and college) used a regular monthly budget.

Numerous studies have recognized the challenges and vulnerabilities that college students face when trying to manage credit cards on their own. Their parents may be unaware that they are acquiring credit and possibly incurring large sums of debt (Hayhoe, Leach, Turner, Bruin, & Lawrence, 2000; Norvilitis & Maria, 2002; Warwick & Mansfield, 2000). Yet, marketers actively target college students. These students are perceived as having more spending power, both currently and in the future, and generally will earn more money than adults without a college education (Feldman, 1999; Speer, 1998).

The American Savings Education Council (1999), the Employee Benefit Research Institute, and Mathew Greenwald and Associates jointly administered a self-reporting survey to students, ages 16-22, and reported that only 21% had taken a course in personal finance and two-thirds felt they should learn more about the basics of money management. Although the two-thirds reported a need for more financial knowledge, 65% reported having personal finance courses available to them but not enrolling in one of these courses. College students were more apt to have a personal finance course available to them than high school students (67% versus 57% respectively).

Studies also have documented where students actually learn how to make consumer and financial decisions. For example, The National Consumers League (2002) facilitated a national survey that found that 67% of teens obtain information on financial matters (such as credit) from their parents, however, the average American family carries a credit card balance of $9,000. The American Savings Education Council (1999) supported this finding with their study that found 94% of students (ages 16-22) relied on parents as resources for financial information. Another study (Chen & Volpe, 2002) also found that young adults tend to learn more about financial literacy from their parents. On the other hand, another study (Harris Interactive, 2004) has suggested that children and youth influence their parents' and others' decision making on consumer purchases, such as clothing, food, and family vacations, and are considered cultural trend-setters, thus making them even more desirable targets for marketers. In contrast, McNeal and Yeh (1993) found that specific family income levels may have little influence in the way families teach consumer behavior patterns to their children.

Methodology

This study was based on the Sproles and Sproles (1990) study and was conducted during two class meetings with first-year, first-semester students enrolled in a first-year

experience course. Two instruments were administered and a discussion of the results was conducted with each participating class.

Participant Sample

A convenience sample of 416 out of 1806 full-time, first-year, first-semester students at a southeastern comprehensive public university, during Fall 2003, was selected. The students were enrolled in a first-year experience course and lived in co-educational residence halls that housed only first-year, first-semester students. The purpose of the course is to assist first-year, first-semester students in their transition to the college environment and concentrate on skills to help them succeed academically, socially, and personally. Students living in these residence halls were chosen on a first-come, first-served basis, based on the receipt date of the students' residence hall applications and room deposits, and are considered to be representative only of similarly situated students.

Three hundred thirty-two students comprised the final sample analyzed due to exclusion criteria such as incomplete surveys, being under the age of eighteen, not indicating gender, and reporting multiple mind styles. The final sample consisted of 197 (59.2%) females and 135 (40.5%) males.

Instrumentation

Two instruments were used for this study: the Gregorc Style Delineator™ (Gregorc, 1982b) and the Consumer Styles Inventory (Sproles & Kendall, 1986). These instruments were administered as described below.

The Gregorc Style Delineator™. The Gregorc Style Delineator™ was administered to assess mind styles. This is a self-reporting, self-scoring instrument containing word matrices, and it can be completed in approximately 15 minutes with immediate feedback. Scores were tabulated for the four mind styles: (a) Concrete Sequential; (b) Abstract Sequential; (c) Abstract Random; and (d) Concrete Random. The instrument consisted of 10 categories of descriptive words and individuals ranked the words in rank order from "4" being the most like them to "1" being the least like them. The highest score indicated the dominant mind style. It is possible to have multiple, dominant mind styles. Characteristics of each mind style are listed and described on the back of each instrument. The Gregorc Style Delineator™ was used for this study to emphasize the ease of self-scoring in an educational setting.

The Consumer Styles Inventory. The Consumer Styles Inventory contained 39 statements that required one answer to be chosen for each item statement that best represented the student's response. A Likert scale was used, with "5" representing strongly disagree to "1" representing strongly agree.

The study was conducted during two regularly scheduled class meetings for each participating class. The first visit included facilitation of the research instruments. The second visit included follow-up and a discussion of the results.

Results

Statistical analyses were performed to determine whether a relationship existed between the four self-reported, mind styles scores and eight consumer decision-making styles. The statistical methods used were similar to the Sproles and Sproles (1990) study. Although this study did not support findings from previous studies, significant relationships were found between three of the mind styles scores and one consumer decision-making style.

For the 332 students participating in this study, descriptive analyses indicated the self-reported, dominant mind style scores were fairly evenly distributed, except for the Abstract Sequential mind style scores. The self-reported dominant mind styles were as follows: Abstract Random, (n = 114, 34.2%); Concrete Sequential (n = 107, 32.1%); Concrete Random (n = 83, 24.9%); and Abstract Sequential, (n = 29, 8.7%).

Consumer Decision-Making Styles Inventory Factor Analysis

Exploratory factor analysis was performed to determine the consistency with which items previously associated with a particular consumer decision-making style maintained that association with this sample. Various studies have shown differences in factors in diverse populations (Canabal, 2002; Walsh et al., 2001).

Exploratory Factor Analysis, using principal components analysis and with direct oblimin and eigenvalues greater than 1, was conducted to determine whether the eight consumer decision-making styles could be confirmed from the Sproles and Kendall (1986) study. Only one factor, the Recreational/Hedonistic consumer decision-making style, with six statements loading .60 or higher, accounted for 15.18% of the variance, and is noted in Table 1. The statements that loaded onto the Recreational/Hedonistic consumer decision-making style are reported. This result was not consistent with the emergence of factors reported in other studies (Canabal, 2002; Mitchell & Bates, 1998; Walsh et al., 2001).

Table 1
Factor Analysis of the Consumer Styles Inventory Statements Using Principle Components Analysis for the Current Study

Statement	Factor Loading
Recreational/Hedonistic	
I keep my wardrobe up-to-date with changing fashions.	.68
Fashionable, attractive styling is very important to me.	.65
Going shopping is one of the enjoyable activities in my life.	.65
I enjoy shopping just for the fun of it.	.62
I prefer buying the best-selling brands.	.62

Note. The Recreational/Hedonistic factor accounted for 15.81% of the variance.

Pearson's Correlations for the Gregorc Mind Style Scores and the Recreational/Hedonistic Consumer Decision-Making Style

To determine whether a relationship existed between the one factor, Recreational/Hedonistic consumer decision-making style, and the students' Gregorc mind style scores, Pearson's correlations were calculated. It should be noted that the Gregorc mind style scores reported in Table 2 reflect a score for each mind style for each beginning college student. This is an important characteristic of the Gregorc Style Delineator™ instrument. Pearson's correlation was conducted to "assess the basic association between individual learning style and their consumer decision-making styles" (Sproles & Sproles, 1990, p. 138). In this study, mind styles replaced the learning styles instrument used in the original study. The mind style scores were the dependent variables and each statement from the Consumer Styles Inventory was an independent variable.

Table 2

Pearson's Correlations of the Recreational/Hedonistic Consumer Decision-Making Style Composite Scores and the Gregorc Mind Style Scores

Consumer Decision-Making Factor for the Current Study	Mind Styles			
	Concrete Sequential	Abstract Sequential	Abstract Random	Concrete Random
Recreational/Hedonistic	.07	-.21*	.17*	.04*

Note. Each student reported a numerical score for each mind style and these are reflected in the mind style scores reported for this analysis. The Recreational/Hedonistic factor is comprised of a composite score (the sum of the six statement scores) of the Consumer Decision-Making Style Inventory statements that loaded onto this factor. The statements were scaled according to 1 = Strongly Disagree, 2 = Disagree, 3 = In Between, 4 = Agree, and 5 = Strongly Agree.

* Correlation is significant at the $p < .01$ level (2-tailed).

Using an alpha level of $p < .05$, the resulting alpha coefficients indicated a positive, significant relationship between the Recreational/Hedonistic consumer decision-making style composite scores (the sum of the six Consumer Styles Inventory statements) as shown in Table 3 and the Gregorc mind style scores for Concrete Random and Abstract Random. The negative alpha coefficient, $p = -.21$, indicated a significant, inverse relationship between the Abstract Sequential mind style scores and the Recreational/Hedonistic consumer decision-making style. There was no significant relationship, $p = .07$, between the Concrete Sequential mind style scores and the Recreational/Hedonistic consumer decision-making style.

Table 3

Pearson's Correlations of the Recreational/Hedonistic Consumer Decision-Making Style Statements and the Gregorc Mind Style Scores

Consumer Decision-Making Style Statements	Mind Styles			
	Concrete Sequential	Abstract Sequential	Abstract Random	Concrete Random
I enjoy shopping just for the fun of it.	-.02*	-.22*	.20*	.05*
I prefer buying the best-selling brands.	.12*	.02*	.01*	.02*
I usually have one or more outfits of the very newest style.	.10	-.15*	.06	.04
I keep my wardrobe up-to-date with the changing fashions.	.06	-.13*	.10	.03
Fashionable, attractive styling is very important to me.	.06	-.15*	.12*	.04

Note. Statements were scaled according to 1 = Strongly Disagree, 2 = Disagree, 3 = In Between, 4 = Agree, and 5 = Strongly Agree. Negative *r* correlations represent inverse relationships.

* Correlation is significant at the $p < .05$ level (2-tailed).

To further investigate the relationship between the first-year, first-semester college students' mind style scores and the one factor, Recreational/Hedonistic consumer decision-making style, Pearson's correlation was computed between the six individual statements for

the factor and the mind style scores for each student. As noted in Table 3, correlation coefficients of each mind style and each statement of the one factor, Recreational/Hedonistic consumer decision-making style, were calculated using an alpha level of $p < .05$.

As required for the Gregorc Style Delineator™, each student reported one score for each mind style: Concrete Sequential, Abstract Sequential, Abstract Random, and Concrete Random. Thus, the decision was made to use each student's four mind style scores for this analysis. As shown in Table 3, Concrete Sequential and Concrete Random mind style scores were significant with the same three out of six of the Consumer Styles Inventory statements. Scores for the Abstract Sequential mind style indicated significant relationships with all six Consumer Styles Inventory statements. Scores for the Abstract Random mind style indicated significant relationships with four of the six Consumer Styles Inventory statements.

Delimitations

Only full-time, first-year, first-semester students, living on-campus, 18 years of age and older were targeted. These students also were enrolled in the first-year experience courses being taught in all-freshmen residence halls.

Limitations

A limitation of this study was the students enrolled and in-attendance in each participating first-year experience course. Although a mandatory attendance policy was in effect for each class, participation was voluntary and limited to those who chose to participate.

Discussion and Conclusions

The purpose of this study was to determine whether a relationship exists between first-year, first-semester college students' mind styles and their consumer decision-making styles. This section presents a discussion of the results and recommendations for future research, practice, and policy.

The Gregorc Mind Styles

The results of the descriptive analysis indicated that the students' self-reported dominant mind styles scores were fairly evenly distributed, except for the Abstract Sequential mind style, which was the smallest percentage of dominant mind style reported by the students. No frequencies of population mind styles were provided by Gregorc's study (1982c) to compare to this study.

Although Gregorc (1982c) did not report frequency distributions of mind style scores in his original study, Gregorc (personal communication, December 5, 2003) has observed (through years of seminars and research using the Gregorc Style Delineator™) that people tend to report Abstract Sequential as their dominant mind styles much less frequently. This also seemed characteristic for this study.

The Recreational/Hedonistic Consumer Decision-Making Style

Exploratory factor analysis revealed only one factor, the Recreational/Hedonistic consumer decision-making style. This finding contrasts with the Kendall and Sproles (1986) study that found eight consumer decision-making styles. This also contrasts with other previous studies that either confirmed or partially confirmed the eight consumer decision-making styles (Canabal, 2002; Sproles & Sproles, 1990; Walsh et al., 2001). Other studies that

have conducted factor analyses have produced varied results. Earlier studies used sophomore to senior level college students. The only study that used an adult, non-college age sample was Walsh et al. (2001).

The Relationship of the Gregorc Mind Styles and the Recreational/Hedonistic Consumer Decision-Making Style

Using Pearson's correlation with an alpha level of $p < .05$, significant, positive relationships were found for the Recreational/Hedonistic consumer decision-making style and the Abstract Random and Concrete Random mind style scores. The Concrete Sequential mind style scores did not show significant relationships with the composite scores for the Recreational/Hedonistic consumer decision-making style. The Abstract Sequential mind style scores had a significant, inverse relationship with the Recreational/Hedonistic consumer decision-making style.

Based on the findings of this study, it can be concluded the Abstract Random mind style scores and the Concrete Random mind style scores are more characteristic of the Recreational/Hedonistic consumer decision-making style. Students whose dominant mind style was Abstract Sequential were less likely to be associated with the Recreational/Hedonistic consumer decision-making style.

The lack of a significant relationship between the Concrete Sequential mind style scores and the Recreational/Hedonistic consumer decision-making style suggested that the students who have this dominant mind style do not enjoy shopping as a social activity. Persons with the Concrete Sequential as their dominant mind style are easily distracted, prefer structure, and may be overwhelmed by too many choices (Gregorc, 1982c), which supports this lack of significant relationship. People who possess more characteristics of the Abstract Random and Concrete Random mind styles tend to enjoy social activities and are less likely to be overwhelmed by many choices (Gregorc, 1982c), which supports the resulting significant relationships for this study. People with Abstract Sequential characteristics tend to want structured environments and opportunities for problem-solving and research, and would be less likely to enjoy social situations (Gregorc, 1982c), which supports the significant, inverse relationship with the Recreational/Hedonistic consumer decision-making style for this study.

Recommendations for Further Research

Since the current study was unable to confirm the previous studies' consumer decision-making styles, other than the Recreational/Hedonistic consumer decision-making style for this sample, future studies should investigate the potential influence of marketing strategies, education, peer interaction, and family environments on how students report mind styles and also impact consumer decision-making.

1. Further research also is recommended to compare potential differences in consumer behavior from the Sproles and Kendall (1986) study's time frame and this current study. Other studies (Harris Interactive, 2004; Levine, 1988) have acknowledged the increase in discretionary spending of college students from the 1980s through the 2000s, and this might also have influenced responses to the questions the Consumer Styles Inventory statements.
2. Future studies of first-year, first-semester college students might consider re-wording the statements to reflect how they may interpret the Consumer Styles Inventory statements. Further research on characteristics of dialogue of this age

group is recommended. Additionally, the development of a new instrument for consumer decision-making styles may be warranted.

Recommendations for Practice

Although further investigation is needed to study the relationship between the Gregorc Style Delineator™ and the Consumer Styles Inventory, there are multiple educational opportunities for these instruments to be used independently of one another. Educational applications of the Gregorc Style Delineator™ can be quite useful for first-year experience programs. The Gregorc Style Delineator™ and the Gregorc Learner Extenda-Chart (see http://www.gregorc.com), which more fully explains the mind styles, could be used simultaneously to assist students to better understand their mind styles for self-assessment and reflection, and to improve and adjust their learning behaviors in the classroom as appropriate. Additionally, it should be used to help students learn how they relate to others personally and socially.

1. Based on the findings of this study that beginning college students tend to be recreational shoppers, residence hall extracurricular programming and first-year experience offices should offer extracurricular activities that promote social development without encouraging students to spend discretionary money on recreation and entertainment through offering on-campus social events, seminars, and workshops of interest to students on campus. Opportunities are often made available for students to participate in volunteer work through service learning projects between the university and the community that not only emphasize the importance of community outreach but also encourage social development through interaction with their peers. Many universities already offer such opportunities through their first-year experience courses, residence hall programming, and career services.

   Other ways to incorporate concepts into first-year experience courses are to provide financial training to instructors of these courses and to encourage them to incorporate financial concepts into the classroom. First-year summer orientation programs should encourage students to enroll in first-year courses where these topics could be taught (Santovec, 2003). Consumer educators, financial counselors, resource management faculty, and business faculty could provide both training for first-year course instructors and also volunteer to present seminars or workshops to students enrolled in these courses.
2. Knowing that students may enter early adulthood without appropriate consumer decision-making, high school family and consumer sciences courses and college first-year experience courses should incorporate financial concepts into their curricula. College students tend to wait until they have financial problems before they seek financial counseling. Because of this, prevention of financial problems is essential (Hayhoe et al., 1999). Financial management courses can provide such education early in students' academic careers. Programming also should emphasize the financial consequences of overspending, especially on recreational shopping. Activities could include budgeting and discussions of the consequences of using credit cards. Additional learning activities might include consumer games, such as *Name that Denim* or *Taste Tests,* which help motivate students to learn better consumer decision-making (Wheeler & Thompson, 2001).

Secondary family and consumer science curricula may simultaneously teach students appropriate consumer decision-making skills while also meeting the National Standards for Family and Consumer Sciences (National Association of State Administrators for Family and Consumer Sciences, 1998). An example is newspaper inserts (Chase, Hayhoe, & O'Neill, 2004) with lesson plans that can be used both in the classroom and outside the classroom. Such inserts can teach basic financial concepts to young adults through covering topics such as budgeting, credit, predatory lending, and identity theft. These activities also would meet the following National Standard for Family and Consumer Sciences: 2.6 Demonstrate management of financial resources to meet the goals of individuals and families across the life span. If personal finance courses or first-year experiences are not offered, school newspapers can provide these inserts to introduce students to these topics.

Another example of meeting national standards while teaching appropriate consumer decision-making and increase financial literacy is to incorporate the National Endowment for Financial Education's High School Financial Planning Program® (in cooperation with the United States Department of Agriculture-Cooperative State Research, Education, and Extension Service or their local credit union). This curriculum includes timely topics such as savings, budgeting, consumer decision-making, and investing. Training is available to educators and they may choose to use all or parts of the curriculum to best suit their needs.

Family and Consumer Science educators may also partner with agencies, such as their local Cooperative Extension offices, to teach consumer decision-making through the simulation game, Reality Store℠, to teach appropriate decision-making. Students need to choose a specific career and must make consumer decisions, such as paying bills, within the limits of the salary allotted for their chosen career.

3. An introductory program about the use of credit is *To Be a Have or Have Not: The Choice is Yours*. Originally designed for college student orientation programs, this program also has been used with high school juniors and seniors. Visit http://www.ahrm.vt.edu/Extension/www/index.shtml to view the program.

Recommendations for Policy

Based on the findings of this study that first-year, first-semester college students are recreational shoppers, researchers, consumer advocates, and families should continue to petition policymakers for mandatory personal finance education at the secondary and higher education levels. Researchers (Braunstein & Welch, 2002; Greenspan, 2003) have acknowledged that the marketplace is more complex than ever and the continued fast pace of technology suggests a need for continued resource management education for all ages, especially young adults. Hogarth, Beverly, and Hilgert (2003) confirmed other studies that found American households do not necessarily follow recommended financial practices, and young adults learn most from others' experiences.

1. Because mandating personal finance curricula can be challenging in school systems (and college and universities) that already are competing for time to teach required academic courses (Braunsten & Welch, 2002), personal finance topics should be incorporated into existing courses, such as economics and mathematics.

However, care must be taken to assure that all financial concepts are included and that they are taught in a sequence that makes them useful.

2. Researchers and educators also should continue to track the progress of having versus not having personal finance education on the long-term success of young adults. It is important to investigate consumer's knowledge on personal finance topics and adapt and improve educational strategies to reach as many consumers as possible. Through tracking such progress, researchers, educators, and consumer advocates also can influence policymakers at the secondary and higher education levels to provide personal finance education (Chase, Leech, & Hayhoe, 2004).
3. Many colleges and universities offer courses in personal finance and/or consumer skills that are taught in business and family and consumer sciences units. These courses are suitable electives for majors in any field (Chase, Leech, & Hayhoe, 2004).

A significant relationship was found between the self-reported mind style scores and the Recreational/Hedonistic consumer decision-making style for the beginning college students in this study. However, additional research is warranted to further investigate this relationship. Knowing that students are consumers and that first-year, first-semester students tend to be recreational shoppers, numerous recommendations for research, policy, and practice have been proposed. Specific ideas are suggested for educators in higher education programming to assist students in avoiding pitfalls of poor consumer decisions.

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CAREER ASPIRATIONS OF PREGNANT AND PARENTING ADOLESCENTS

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The purpose of this study was to examine career aspirations of pregnant and/or parenting adolescents. Social Cognitive Career Theory provided the theoretical framework. Females enrolled in a teenage parenting center completed a questionnaire to determine career aspirations. Findings indicated age and source of career information had a significant effect on career aspirations of participants. Pregnant adolescents aspired to more prestigious careers than parenting adolescents and adolescents who were both pregnant and parenting. A large portion of participants aspired to become registered nurses. Findings from this study can assist educators, counselors, and families in developing long-term programs to provide pregnant and parenting adolescents academic and career development skills for success in attaining their future career aspirations.

While slightly decreasing in rates in recent years, adolescent pregnancy continues to be prevalent in the United States, with nearly one million teenage females becoming pregnant each year (Meade & Ickovics, 2005; Sarri & Phillips, 2004). The country's adolescent pregnancy rate remains the highest among western industrialized nations, with 4 of every 10 pregnancies occurring in women younger than age 20 (Dangal, 2006; SmithBattle, 2003; Spear, 2004). Characteristics such as family structure, age at first intercourse, low self-esteem and educational expectations, poor academic performance, low socioeconomic status, and lack of career aspirations or goals have been associated with adolescent pregnancy (Kaufman, 1996; McCullough & Scherman, 1991; Stewart, 2003; Xie, Cairns, & Cairns, 2001). Adolescent pregnancy poses various social consequences for teen mothers and has been associated with lower educational attainment, which often leads to poverty and/or high school dropout (Hayes, 1987; Meade & Ickovics, 2005; National Campaign to Prevent Teen Pregnancy, 2002). Pregnancy is one of the reasons commonly cited by female secondary students for dropping out of high school (Brindis & Philliber, 2003).

Pregnant secondary students are more likely to possess lower career aspirations, attain less prestigious occupations, experience less satisfaction with career progress than their non-pregnant peers, and feel their future job choices are limited (Coles, 2005; Nord, Moore, Morrison, Brown, & Myers, 1992). Because adolescent mothers often lack work experience, educational skills, and job training, they are less competitive in the workforce. As a result, a large number of adolescent mothers are disproportionately poor, depending on public assistance to support them economically (Maynard, 1996; Rothenberg & Weissman, 2002).

Goals and Career Aspirations

Adolescence is a time when teenagers develop certain aspirations regarding their education and future careers. Aspirations represent a person's orientation toward particular goals and can be influenced by variables such as gender, socioeconomic status, family support,

parental expectations, and cultural values (Khallad, 2000; Rojewski, 1996a). During adolescence, aspirations are especially important because they allow teenagers to evaluate the degree to which various choices help or hinder their chances of attaining desired goals. A career aspiration is defined as the occupation a person desires to pursue if there were no reality constraints (Arbona & Novy, 1991). Career aspirations represent an individual's orientation toward a particular career goal and may cause an individual to closely examine decisions regarding schooling or the future. Career aspirations may also reflect past experiences and perceived barriers (Gottfredson & Becker, 1981; Rojewski, 1996b).

Theoretical Framework

The Social Cognitive Career Theory (SCCT) is a framework based on Bandura's (1986) social cognitive theory. The theory attempts to complement and build conceptual linkages with existing career development theories (Lent, Hackett, & Brown, 1996). SCCT examines the development of career and academic interests, career choice, and performance outcomes (Albert & Luzzo, 1999; Gore Jr. & Leuwerke, 2000). SCCT describes numerous personal variables and their interaction with other aspects of the individual and the environment to form the career development path (Lent, Brown, & Hackett, 2000). According to SCCT, three main variables are believed to regulate an individual's career behavior. These three variables, self-efficacy, outcome expectations, and goals, are commonly described as the "building blocks" of career development (Lent, Brown, & Hackett, 2002; Lent et al., 1996; Smaby, Crews, & Downing, 1999). Self-efficacy refers to people's judgment about their capabilities to take action to achieve designated types of performances. Outcome expectations are personal beliefs about the probable consequences or outcomes of performing particular behaviors (Lent & Brown, 1996). The final variable focuses on goals and how setting goals guides an individual's behavior (Albert & Luzzo, 1999). Taken together, self-efficacy, outcome expectations, and goals are said to influence educational and vocational choices (Lent, Brown, & Hackett, 1994).

Purpose of the Study

The purpose of this study was to examine career aspirations of pregnant and/or parenting adolescent females. Adolescence is a time of self-definition as an individual moves from childhood into young adulthood (Merrick, 1995). For this study, an adolescent female was defined as a girl between 13 and 19 years of age. Independent variables for demographics included age, race, parenthood status, parents' occupation, parents' education level, and source of career information. Parenthood status consisted of three categories: pregnant, parenting, or both pregnant and parenting. Pregnant was defined as a female adolescent who was expecting a child. Parenting was defined as a female adolescent who became a biological parent before age 20 (Xie et al., 2001). The term pregnant and parenting described females who had one or more children and were pregnant at the time of this study. Career aspirations, the dependent variable, represented an individual's orientation toward a particular career goal (Rojewski, 1996b).

Method

Population and Sample

The target population for this study was all pregnant and/or parenting adolescent females in a southeastern state. The accessible population consisted of pregnant and/or parenting teens attending a teenage parenting center that solely served the needs of pregnant and parenting adolescents. Therefore, this was a sample of convenience. Based on Olejnik's (1984) four factors for sample size selection, a sample size of 51 participants was required for a large effect size, a

statistical power of .70, and an alpha level of .05. A total of 79 participants completed and returned questionnaires.

Instrument

This study employed the use of a cross-sectional survey because the data was collected at one point in time (Creswell, 2003). Survey design was chosen to generalize the results from the sample to the larger population. The questionnaire for this study included demographics for age, race, parenthood status, parents' occupation, parents' education level, and source of career information. Responses to the open-ended career aspiration question were assigned a four-digit code according to prestige scores from Nakao and Treas's (1992) Socioeconomic Index (SEI). To control for validity and reliability of respondents' scores, a pilot test was conducted with a sample of 11 adolescent females from a teen parenting program at a hospital in a southeastern state. The pilot test also determined how to code and record student responses using the SEI. A two-rater coding system was used to ensure unanimous agreement on the classification of each respondent's career aspiration.

Procedure

Permission was granted from authorities in the participating school district and from the university's Institutional Review Board (IRB). Individuals who participated in this study completed an anonymous two-page questionnaire consisting of questions focused on demographic information, as well as an open-ended question regarding career aspirations. Questionnaires were administered by teachers to adolescent females enrolled at a teenage parenting center. All adolescent females completed the same questionnaire, and participants could discontinue participation in the study at any time.

Data Analysis

Data compilation, verification, and analyses were completed using the Statistical Package for the Social Sciences (SPSS), Release 11.5.1 for Windows. Both descriptive and inferential statistics were used to compare the independent variables with the dependent variable. Means and standard deviations were calculated to compare respondents' demographic data with career aspirations. All research questions were analyzed using one-way analysis of variance (ANOVA). If a one-way ANOVA found a significant difference, post-hoc tests were run to determine where the differences occurred, and effect size was calculated.

Findings

Demographic Profile

The total number of respondents for this study was 79. All respondents were female and ranged from 13 to 19 years of age. The mean age of respondents was 16.41 years and the standard deviation was 1.36. The majority of respondents were African American. There were more parenting adolescents than pregnant adolescents and only two respondents reported being both pregnant and parenting. Demographic information describing the 79 respondents is presented in Table 1.

Table 1
Demographic Information of Respondents

Independent variable	N	Percentage
Age		
13	3	3.8
14	3	3.8
15	13	16.5
16	19	24.1
17	26	32.9
18	12	15.2
19	3	3.8
Race		
American Indian/Alaskan Native	4	5.1
African American	63	79.7
Hispanic	3	3.8
Multi-Racial	3	3.8
Caucasian	6	7.6
Parenthood Status[a]		
Pregnant	33	42.3
Parenting	43	55.1
Pregnant and Parenting	2	2.6
Parents' Education Level		
Mother		
Did not finish high school	14	17.7
High school graduate	29	36.7
2-year college graduate	6	7.6
4-year college graduate	10	12.7
Completed some college	7	8.9
Not sure	13	16.5
Father		
Did not finish high school	9	11.4
High school graduate	28	35.4
2-year college graduate	4	5.1
4-year college graduate	4	5.1
Completed some college	8	10.1
Not sure	26	32.9
Source of Career Information[b]		
Mother	19	25.7
Father	2	2.7
Teacher(s)	12	16.2
Guidance counselor	3	4.1
School career center	6	8.1
Other adults	6	8.1
Friends	1	1.4
Books, magazines, newspaper, television	15	20.3
Other	10	13.5

[a]There was one missing observation. [b]There were five missing observations.

Pregnant adolescents (n=31) chose career aspirations with prestige scores ranging from 26.39 (cosmetologist/hairdresser) to 97.16 (physician). A majority of these pregnant adolescents (29.0%) indicated they wished to become registered nurses, followed by physicians or protective service personnel (both 12.1%). Parenting adolescents (n=42) chose career aspirations with prestige scores ranging from 26.39 (cosmetologist/hairdresser) to 97.16 (physician). The majority of parenting adolescents (30.2%) also aspired to become registered nurses. The occupations of physician (18.6%) and cosmetologist/hairdresser (9.3%) were the second and third highest career aspirations desired by parenting adolescents. Two adolescents were pregnant and parenting, meaning they had one or more children and were currently pregnant. One adolescent female who was pregnant and parenting desired to become a police officer, while the other pregnant and parenting adolescent female aspired to be a registered nurse.

For the independent variable parenthood status, no statistically significant difference was found regarding the career aspirations of pregnant or parenting adolescents when a one-way ANOVA was conducted. Because there were only two females categorized as both pregnant and parenting, these respondents were removed from analysis. Perhaps if more participants were in this group, significant differences may have been found.

The independent variable, age, was examined to determine the effect on career aspirations of pregnant or parenting adolescents. Age had a significant effect on career aspirations of pregnant or parenting adolescents at the .05 alpha level, $F(3, 72)=3.20$, $p=.028$. Bonferroni tests revealed the difference existed in adolescents between ages 13 to 15 compared to adolescents who were 16 years of age ($p=.022$). Younger adolescents between ages 13 to 15 had a slightly higher mean average for career aspirations than adolescent females in the other age groups (16, 17, and 18 to 19 years). A large effect size of .118 indicated that 11.8% of the variation in the dependent variable, career aspiration, can be attributed to the independent variable, age. See table 2.

Table 2

Means and Standard Deviations of Prestige Scores for Career Aspirations Based on Age

Age group	N[a]	M	SD
13-15	18	81.33	17.90
16	18	60.67	24.60
17	26	68.01	19.46
18-19	14	67.00	20.20

[a]There were three missing observations.

Race, another independent variable, did not have a statistically significant difference on career aspirations of pregnant or parenting adolescents. Perhaps if the sample was more diverse, results would have yielded significant differences. However, for this study, the large number of African American participants made it difficult to determine if race had any effect on the career aspirations of pregnant or parenting adolescents. A seventh independent variable examined the effect of parents' occupation on career aspirations of pregnant or parenting adolescents. Parents' occupation did not show a statistically significant difference on the career aspirations of pregnant or parenting adolescents. Parents' education level, the eighth independent variable, did not have a statistically significant effect on career aspirations of pregnant or parenting adolescents.

The final independent variable for this study explored the effect of the source of career information on career aspirations of pregnant or parenting adolescents. Due to the variety of

answers resulting in small group sizes, responses were collapsed into the following new categories to obtain larger numbers for analyses: *family*, which included mother and father, *school,* which consisted of teachers, guidance counselors, and school career centers, *other,* including other adults and friends, and *media,* consisting of books, magazines, newspapers, and television. Source of career information did have a statistically significant effect on career aspirations of pregnant or parenting adolescents at the .05 alpha level, $F(3, 67)=4.56$, $p=.006$. The difference was between the *family* group compared to the group labeled *other* ($p=.047$), and with the *family* group compared to the *media* group ($p=.008$). Within the *family* group, mothers were cited most often as the best source of career information (n=19 or 25.7%), followed closely by books, television, and magazines (n=15 or 20.3%) from the *media* group, and then teachers, from the *school* group (n=12 or 16.2%). See table 3.

Table 3
Source of Career Information for Pregnant or Parenting Adolescents

	Pregnant or parenting adolescents' career aspirations		
Source of career information	N[a]	M	SD
Family	20	82.04	19.17
School	21	72.05	21.18
Other	15	63.03	20.50
Media	15	58.67	20.35

[a]There were eight missing observations.

Effect size was calculated for the significant findings. Eta squared was calculated to be .169, indicating a large effect size of practical significance. Therefore, 16.9% of the variation in the dependent variable, career aspiration, can be attributed to the independent variable, source of career information.

Conclusions

Of the six independent variables examined in this study, age and source of career information were the only two to show a statistically significant difference on the career aspirations of pregnant or parenting adolescents. Regarding age, adolescents between ages 13 to 15 had a slightly higher mean average for career aspirations than adolescent females who were 16 to 19 years of age. For source of career information, group 1 (family) had more of an effect on career aspirations of pregnant or parenting adolescents than group three (other) and group four (media). The majority of pregnant adolescents aspired to become registered nurses. Likewise, the majority of parenting adolescents aspired to become registered nurses. Other occupations pregnant or parenting adolescents aspired to included physicians; protective service careers in the Air Force, Army, or Navy; lawyers; and hairdressers or cosmetologists. Parenthood status, race, parents' occupation, and parents' education level did not affect career aspirations of pregnant or parenting adolescents. Nearly three-quarters of respondents indicated that adolescent parenthood would not prevent them from obtaining their desired career.

Discussion and Implications

One noteworthy observation from this study was that despite parenthood status, the majority of adolescent females aspired to become registered nurses. This finding is consistent

with Drummond and Hansford's (1992) study, as they reported that pregnant adolescents most often aspired to nursing careers. Adolescent females' desire to become nurses could be attributed to their exposure to the nursing community throughout the duration of their pregnancy and birth process. Five of the eight high schools which are the home schools of the participants offer Healthcare Science classes these adolescent females may have been enrolled in prior to entering the teenage parenting center. Their potential involvement in Healthcare Science classes may correlate with their developing interests in the nursing field and could influence their aspirations of wanting to become nurses. In addition, several adolescent females aspired to careers in the protective service sector of the workforce. This could be due to the fact that a large military base is located in the same city as the teenage parenting center. Thus, these adolescents are likely exposed to military careers through local newspaper and television advertisements, friends, or relatives. In fact, many adolescent females indicated one or both of their parents were employed in the military, which could also influence these females to aspire to military careers.

Previous research has typically found African Americans to have lower career aspirations than their European American counterparts (Hellenga, Aber, & Rhodes, 2002). Osipow and Fitzgerald (1996) supported this notion, stating African Americans, Hispanics, and Native Americans exhibited considerably lower occupational outcomes than Caucasians. Brown and Barbosa (2001) found that career aspirations of females from low-income families were confined to the experiences of their relatives and friends. In this study, race did not have a statistically significant difference on career aspirations of pregnant or parenting adolescent females.

When evaluating source of career information on career aspirations of pregnant or parenting adolescents, this study found that these adolescent females received most career information from the family, particularly the mother. In examining this finding, it may be linked to a single head of household mother or adolescents being more aware of their mothers' occupation. Participants in this study reported being more impacted by media than school resources with respect to source of career information. School resources such as teachers, counselors, and school career centers were ranked lower than media, perhaps suggesting adolescents are not receiving substantial career information in the school setting. Considering this study was conducted in a school designed to serve the needs of pregnant and parenting adolescents, this information outlines the necessity for a significant concentration on quality career development programs. This supports Cole's (2005) findings that define a need for early career education emphasizing opportunities and resources available to achieve education.

There has been minimal research on career aspirations of pregnant and parenting adolescents; however, Social Cognitive Career Theory (SCCT) is effective in examining the interaction of self-efficacy, outcome expectations, and personal goals on the career development process. According to Young, Martin, Young, and Ting (2001), programs that connect behaviors with outcomes and programs that promote the importance of higher education afford adolescents the skills to develop realistic strategies for meeting life goals. Guidance programs that include career education and exploration opportunities have been found to provide exposure to postsecondary education and training options (McWhirter, Rasheed, Crothers, 2000). An implication of this study's findings is the necessity for stringent measures to create intense education programs linking pregnant or parenting adolescent females' outcome expectations with their goals regarding future career aspirations, as outlined in the Social Cognitive Career Theory.

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AN ECOLOGICAL APPROACH TO HIGH SCHOOL STUDENTS' SCHOOL FOOD CHOICE

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Public school systems are required to provide nutritionally healthy meals for all students. However, unhealthy competitive foods are often prevalent and easily accessible. Using an ecological perspective, this study examined how school food choice is affected by the interplay of different environments such as the family (microsystem), school (exosystem), and culture (macrosystem). Using a multi-method approach, 144 adolescents enrolled in a 4-H youth program representing six area high schools were surveyed and personnel from these six high schools were interviewed. Results indicate that adolescents have the knowledge to make healthful food choices, but their behaviors do not support their knowledge.

Poor nutritional status is one of the greatest threats to the health of children in the United States today. The number of overweight and obese children has grown substantially in the past 30 years (Troiano, Flegal, Kuczmarski, Campbell, & Johnson, 1995). In addition to being overweight, only 1% of children age 2 through 19 meet all five food group recommendations and only 4% meet recommendations for four groups (Munoz, Krebs-Smith, Ballard-Barbash & Cleveland, 1997). These staggering statistics may be attributable to many factors such as increased meal portion size, meals eaten outside the home, increased consumption of convenience foods and the widespread availability of non-nutritious foods to children and adolescents at home and in school (Jahns, Siega-Riz, & Popkin, 2001; Heald, 1992; Lin, Guthrie, & Frazao, 1999).

The examination of the factors that account for the variance in food choice is critical for students within a school system. The school system, where one in five children and adolescents consume their main meal per day, reaches approximately 95% of American children and adolescents. The purpose of this study is to examine factors that may be contributing to an adolescent's school food choices using an ecological perspective. The focus of this study will be high school students since high school settings are much more likely to offer a greater variety of food choices for the students than middle and elementary schools (Wechsler, Brener, Kuester, & Miller, 2001). High school students are also likely to have greater decision-making power in what they choose to eat, such as having money to spend on food at school. Exploring factors and the within a high school student's environments is likely to lead to a better understanding of which contexts have the most significance on the high school students' choice of food at school.

Overview

Evidence within various disciplines suggests that food choice is influenced by environmental, personal and behavioral factors (French et al., 1999). The family and school system are two contexts that are the most influential in a child's life (Bronfenbrenner, 1979). From an ecological standpoint, the family is one of the most influential factors related to eating

habits of children. Food practices and beliefs, and the availability of foods can have an impact on eating habits of children. While the family has an initial role in nutrition, the school system's role was brought to national attention as early as the 1940's when older male students were so malnourished they were unable to complete basic training for World War II (Martin, 1999). This military concern led to the creation of the National School Lunch Program in 1946 regulated by the United States Department of Agriculture (USDA).

Today, the issue facing students is being overweight instead of malnourished. Fifteen percent of all adolescents ages 12- 19 are currently overweight and an additional 14% are between the 85th and 95th percentile for Body Mass Index (BMI), which puts them at risk for being overweight (Ogden, Flegal, Carroll, & Johnson, 2002). Contributing to this trend is that 70% of all children exceed recommendations for total fat intake (Position of the American Dietetic Association: Dietary Guidelines for healthy children aged 2-11, 1999).

Within the context of ecological theory and considering the current statistics of children's nutritional status, there is concern about the role that environment plays in teaching children to live a healthy lifestyle. Bronfenbrenner (1979) agrees with other behavioral theorists that human development is "the progressive accommodation between a growing human organism and its immediate environment," but adds that it is also "the way in which this relation is mediated by forces emanating from more remote regions in the larger physical and social milieu" (p. 13). From this perspective, the development of healthy children is dependent on how external environmental forces interact and collaborate with a child's immediate environmental setting and the individual's active participation in the environment. Nutrition is largely influenced in the family and school environments with the larger cultural context playing a role. Adolescent food choices may be more fully explained when examining the interactions of the home and school eating environments and the adolescent's participation in this developmental process.

The family is the primary environment for the developing child and is the earliest socializing agent for children's eating practices. Food practices and beliefs, the availability of foods in the home and the socioeconomic status of the family can all have a substantial impact on eating habits and the nutritional status of children. From an ecological perspective, the family has an initial role in education, but the school system addresses the needs of the child in a traditional classroom context. Children who go to school hungry, who don't have enough time to eat lunch in the school cafeteria, or who make poor food choices will all respond to the school environment differently. All of these instances have the potential to disrupt the school learning-environment. The need for schools to provide more than just an education is unquestionable according to Lerner (1978). An individual develops "as a consequence of a dynamic intermeshing of interdependent influences" (Lerner, 1978, p. 18). Whether teaching nutrition in the classroom or providing the food or place to eat, the school system plays a role in affecting the nutritional status of its students beyond what other environments are capable.

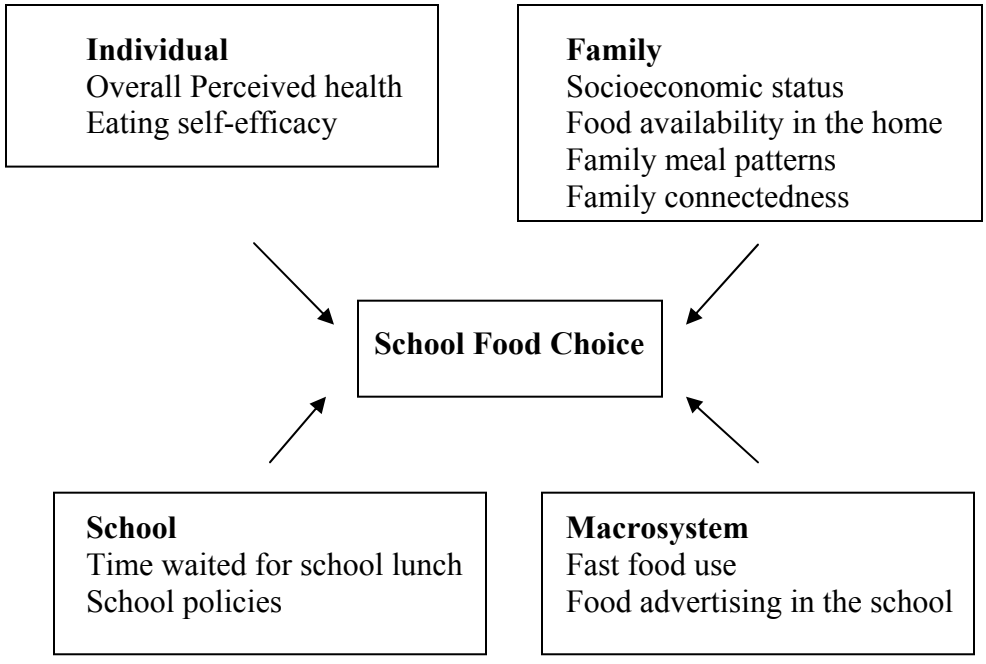
The National School Lunch Program and the Healthy Meals for Healthy Americans Act (1994) regulated school meals mandating that they meet Dietary Guidelines for Americans. Despite these federal policies, snack bars, vending, and soda machines not regulated by the USDA are in competition with the National School Lunch Program (Caldwell & Pilant, 1991). Competitive foods, or any foods sold to children in school foodservice areas during meal periods that are in competition with the federal meal programs, are becoming more common in the school environment (Position of the ADA: Local support for nutrition integrity in schools, 2000). Most competitive foods are not healthy (Story, Hayes, & Kalina, 1996). The availability of non-regulated food choices students have could account for the majority of food the student

consumes during the day (Kennedy & Goldberg, 1995). The choice students have regarding the foods they eat can be seen as a key factor in either the prevention or allowance of becoming overweight or obese and in meeting the recommendations for daily food group servings. These risk factors, in turn, have the potential to affect the nutritional and overall health status of an individual. The availability of non-regulated competitive foods is seen as a barrier to a nutritionally healthy school environment.

Methodology

Using the ecological perspective, this study focuses on high school students' environments, specifically individual and family influences and the school environment to examine the various contexts in which adolescents' food choices are influenced. The study sought to determine if high school students 1) who perceive themselves as healthy and have a high eating self-efficacy make healthy food choices in the school environment; 2) who have a higher socioeconomic status, healthy family eating behaviors, healthy family meal patterns, and healthy relationships with their families make healthy food choices in the school environment; 3) who wait shorter amounts of time to purchase a school lunch and attend schools that regulate policies regarding access and availability make healthy food choices in the school environment; 4) who are not exposed to fast food restaurants and advertising in the school and who limit fast food use outside of the school system make healthy food choices; and 5) to determine which environmental system—the individual, family, school, or macrosystem—has the most influence on adolescent school food choice (see Figure 1).

Figure 1. Relationship Model



A multi-method approach was utilized to gather data from adolescents and school personnel through a survey and interview guide. Recruitment materials were sent to all enrolled 4-H members in grades 9 through 12 during 2002-2003 ($N = 310$) as per collaboration with a

county extension program. Other study criteria included attendance at a public or private high school and eating lunch at school. Youth enrolled in the county 4-H program were considered the sample because 4-H members span across all six school districts located in the county representing various school food policies. Sample demographics are presented in Table 1.

The sample was compared to the 4-H population on demographic variables and was found to be very similar and representative. It should be noted that using a 4-H sample makes it difficult to generalize to an adolescent population. Members of a 4-H program often learn many skills through projects which may put them at greater advantage regarding healthy decision making. In addition, over half (52.8%) of the sample lived on a farm which could affect food availability in the home which has the potential to bias the study.

Table 1
Demographic Characteristics for Participants (*N* = 144)

Age	Years	
M	15.9	
SD	1.21	
Range	14 - 18	
Gender	N	%
Male	42	29.2
Female	102	70.8
School	N	%
A	49	34.0
B	31	21.5
C	20	13.9
D	24	16.7
E	12	8.3
F	8	5.6
Grade	N	%
Ninth	37	25.7
Tenth	37	25.7
Eleventh	38	26.4
Twelfth	32	22.2
Residence	N	%
Farm	76	52.8
Rural Town or Open Country	45	31.3
City	22	15.3
Missing	1	0.7

School personnel from six of the county school districts where participants attended school were interviewed. Interviews were completed with six school foodservice personnel.

Measures

An adolescent survey incorporated two standardized scales as well as questions from studies focusing on perceived health, knowledge of healthy eating; importance of healthy eating; family socioeconomic status; family connectedness; family meal patterns; availability of foods in the home; school environmental factors; and meals eaten outside of the home and school

environments. A pilot test was conducted using a sample of 10 ninth-grade students because it was believed that the youngest participants may have the greatest difficulty understanding questions. Using the test-retest, the pilot test had an overall reliability of .638 ($p < .05$).

Perception of health was measured using several questions. The average score for overall perceived health was 1.91 (*SD = .375)*, with the lower score indicating a more positive response. More than 85% of participants indicated their health status was excellent or good. More than one-third of participants reported a knowledge level indicative of making healthy food choices, yet only 10% of used their knowledge to make healthy food choices.

Type of school food choice was a summary score of 12 food items. The items pertaining to the type of school food choice were highly correlated ($p < .01$) with each other. The mean score for the scale was 3.27 (*SD = .398)* on a Likert scale from 1 (more than once per meal) to 5 (never). Participants ate healthful and unhealthful foods generally a few times per week. For healthful foods, the mean score was 3.72 (*SD = .540)* on the same Likert scale. Normally, participants consumed healthful foods between a few times per week, to less than once per week. For unhealthful foods, the mean score was 2.37 (*SD = .719)* on a reverse Likert scale from 1 (never) to 5 (more than once per meal). Unhealthful foods were typically consumed by participants less than once per week.

Location of school food choice may include a la carte line or school store, vending machine, school lunch, lunch brought from home, and lunch eaten off school grounds during the lunch hour. The family environment was assessed using family socioeconomic status (SES), home food availability, family meal patterns, and family connectedness. The school environment or excosystem was assessed by measuring the amount of time a student waits to purchase a food. The macrosystem or cultural environment was measured by asking what foods were eaten away from home. Foods eaten away from home are part of the macrosystem because they are part of the larger society, not confined to the immediate environments of the individual.

The school interview guide included questions about the types of policies, environmental factors, and media presence in school. In order to assess school food availability and accessibility, sets of questions about school food policies were organized into several categories regarding snack vending machines, beverage machines, a la carte lines, and school stores. After interviews were completed, the researcher sent the copies of the interview to each participant who was interviewed to review for accuracy.

Ratings were assigned to each school based on a coding system. If the response was favorable (supporting healthy access/availability, or limiting unhealthy access/availability), then the response was coded with a + 1. If the response did not apply to that school, for instance, the school did not have a snack vending machine, the response was coded as zero. If the response did not support healthy access/availability, then the response was coded as – 1. Scores were tallied, with the highest score indicating the best school rating. After scores were determined for each school, the rating for the school was assigned to each participant that attended that school.

Results

Data was managed using code numbers to ensure the confidentiality of each participant as per Human Subjects Review procedures. The results are organized around the five study purposes. Multiple regression was used to test the first hypothesis, adolescents who perceive themselves as healthy, make healthy food choices in school. Almost two-thirds of participants (62.5%) felt they had the knowledge to make healthy food choices, yet only 9% of participants said that they always used this knowledge to make healthy food choices. To continue testing this

hypothesis, predictions about type of school food choice from the independent constructs of overall health perception and eating self-efficacy were examined. The proportion of variance explained in the type of school food choice participants made accounted for by overall perceived health and eating self-efficacy was 11.7%. In other words, a participant's perception of his/her health and self-efficacy regarding eating accounted for almost 12% in the variance in the school food choice they made.

Little evidence was found to support that school food choices could be predicted by family variables. Almost half of participants' families ate together four or more times per week (47.2%) and more than half of participants rated eating together as fairly or very important (53.5%), which is a consistent finding in other studies as well (Neumark-Sztainer, Story, Ackard, Moe & Perry, 2000; Story & Resnick, 1986). To test the prediction about school food choice, a linear regression was run with all independent family variables (socioeconomic status, family eating behaviors, family meal patterns, and family connectedness). Linear regression analysis indicated a weak relationship, $R^2 = .072$. Only 7.2% of the variance was explained using this model. Due to the second construct, family eating behaviors, being the only variable related to the outcome, a post-hoc analysis was run using just the family eating behaviors and type of school food choice constructs. Results revealed that $R^2 = .071$. Thus, only 7.1% of the variance was explained using only family eating behaviors as a predictor of type of school food choice. Regression analysis was used to test predictions about the location of food choice from each of the independent constructs (time waited to purchase school lunch and school food access availability rating). Linear regression analysis indicated a weak relationship, $R^2 = .055$ or only 5.5% of the variance in location of school food choice was explained using this model.

Study results indicated that almost half (48.6%) of participants ate away from home or school less than once per week on weekdays and 8.8% ate away from home or school less than once per week on weekends, for an average of 33.7%. Predictions about the location of food choice from each of the independent constructs (school mass media rating and frequency of fast food restaurant use) were tested using regression analysis. Regression analysis indicated a weak relationship, $R^2 = .034$. Only 3.4% of the variance of location of school food choice was explained using this model.

The fifth hypothesis explored the school environment as being most influential in a student's school food choice. Independent variables that had the strongest relationship to school food choice from each prior hypothesis were inserted into a regression equation. From the individual model, overall perceived health was used ($R^2 = .094$). From the family model, family eating behaviors was used. It was the only construct highly correlated with school food choice and explained the most variance in school food choice ($R^2 = .071$). When both of these constructs were regressed on type of school food choice, $R^2 = .135$, or 13.5% of the variance in type of school food choice was explained by both overall perceived health and family eating behaviors.

One construct from the school and cultural models was used in the second regression. From the school model, school access/availability rating was used as it was highly correlated with location of school food choice and accounted for the most explained variance ($R^2 = .057$). From the cultural model, school mass media rating was used and it accounted for the most explained variance ($R^2 = .030$). When both of these constructs were regressed on location of school food choice, $R^2 = .061$, or 6.1% of the variance in location of school food choice was explained by school access and availability rating and the school mass media rating. Between these two models, overall perceived health and family eating behaviors explained more variance

in type of school food choice (13.5%) than the school food access and availability rating and the mass media rating explained in location of school food choice (6.1%).

Discussion

Using an ecological perspective, this study explained the relationships between different environments and school food choice. For hypothesis one, although overall perceived health and eating self-efficacy were moderately correlated with type of school food choice, it is not surprising they would be poor predictors of the type of foods that adolescents choose in schools. Results from this study and others indicate that perceived health and eating self-efficacy were rated fairly high among participants, but the participants' food choice behaviors did not reflect these perceptions (Story & Resnick, 1986).

Family eating behaviors measured foods available at home and was the only construct in the family model to be significantly correlated with type of school food choice. Even though this construct was the only one in the family model to make a significant contribution to the explained variance, it was still very weak. One explanation for this is that the availability of many kinds of foods at school (both healthy and unhealthy) probably greatly outweighs what is available for the adolescent at home. Availability of foods has been consistently shown to be one of the primary reasons adolescents do or do not choose a food to eat (Neumark-Sztainer et al., 2002). Just as importantly, lack of availability is just as likely to be a barrier to eating a healthy diet (Adams, 1997). Even though the adolescent may choose foods at school that are available at home, the availability of many other kinds of foods at school makes the adolescent more likely to choose additional unhealthful foods that are available to them in the school environment. Many unhealthful foods available to adolescents at home are probably also offered at school, which may make students more likely to choose them.

The explained variance was quite low between school food choice with school environmental factors. Survey measures and the calculation of average scores could have hindered the true meaning of these constructs as well as low to moderate reliability of most of the measures. Although findings were not significant, there are still extensive opportunities to change the school atmosphere and policies to meet the best nutritional standards for students. Schools reach 95% of all American children and adolescents and the diets of adolescents, which are too high in sodium, total and saturated fat, could use improvement (Devaney Gordon, & Burghardt, 1995; Munoz et al., 1997; Neumark-Sztainer, Story, Hannan, & Croll, 2002). Addressing policies and environmental factors within the school environment is one way to combat this problem. The ecological perspective also allowed for cultural (macrosystem) constructs (mass-media and fast food restaurant) to be included when examining different environments and affects on adolescent school food choice.

Although the literature supported including mass-media and fast food restaurant use as constructs, the design of the survey and the differences between this sample and the samples of adolescents used in other studies may have been factors that restricted the variance for explaining school food choice.

A significant negative correlation was found between location of school food choice and the mass media rating which is contrary to the hypothesis proposed. In other words, as the school's mass media rating worsened, adolescents choosing foods from healthier locations increased. There may be several explanations for this relationship. Mean scores could have been lowered (thus falsely indicating healthier food choices) by the design of the survey. Additionally, mass media ratings were assigned based on information gathered about fast-food availability and

advertising in the school. Although everything possible was done to make these ratings accurate, it is a possibility that the ratings did not reflect the true impact of advertising or fast food in the school. Several studies have indicated that exposure to fast-food, soft-drink, and convenience food advertising may influence adolescents to choose those types of food (Story, Neumark-Sztainer, & French, 2002; Kraak & Pelletier, 1998). Since most of the schools in this study had either healthy or healthy and unhealthy types of advertising, the advertising of healthful foods could have cancelled out the negative affect of the unhealthy advertising on adolescents' school food choice.

Drastic differences were found between the study population and statistics found in other studies. For instance, 28% adolescents eat away from home or school (Lin et al., 1997) compared to almost half of the study participants. Additionally, only 2.5% of participants indicated that all of the meals they ate away from home or school were from fast-food restaurants as compared with other studies that indicated that up to 31% of meals of all meals consumed away from home or school by adolescents are from fast food restaurants (Lin et al., 1999). It is not surprising that no correlations were found between frequency of fast-food restaurant use and location of school food choice given these differences.

Interestingly, perceived health and family eating behaviors (microsystem) explained more variance in type of school food choice than school food access, availability (exosystem), and mass media influences (macrosystem). This finding supports the ecological perspective that the microsystem considered the family in this study, plays an important role in the eating habits of adolescents. While many public school systems are removing unhealthy competitive foods, the interplay between home/family and school is found to be most salient in an adolescent's food choice at school.

Implications for Educators

Teachers have the ability to positively influence an adolescent’s decision making process and school food policy. With approximately half of all high schools nationwide having contracts with soft drink companies that allow products to be sold during the school day, schools present nutritional messages to students that encourage unhealthy food choices (Weschsler et al., 2001). Making healthy food choices can be a key factor in prevention of being at-risk for being overweight. The findings from this study indicate that knowledge does not always lead to healthy choices. It would seem that equipping students with decision making skills regarding food choice may be beneficial. Teachers should consider implementing decision making models regarding food choices in addition to knowledge regarding basic nutrition.

Influencing school food policy and atmosphere can be another avenue in which teachers can play a role. With the majority of adolescents eating at school, the atmosphere of the school affects how students perceive the foodservice and overall experience of eating in the school setting (Marples & Spillman, 1995). In addition, the availability of non-regulated food choices at school could account for the majority of food a student consumes during the day (Kennedy & Goldberg, 1995). Given this information combined with the findings, there are opportunities to change school atmosphere and policies to best meet the nutritional standards for students. Advocating school policy change directed toward offering healthy food choices could affect the nutritional status of adolescents given that one in ten students consume two of their three meals per day at school and one in five consume one of their main meals at school (Dwyer, 1995).

Implications for Research

The results of this study contribute to the literature regarding adolescent school food choices and its impact of adolescent health. While this study examined various factors, future studies should be conducted that use a more representative sample, standardized outcome measures, and incorporate the health information of participants. Expanding the sample to be more representative should also incorporate various schools and geographic locations, especially a combination of urban and rural. Future research would benefit from expanding the type of data collected. Incorporating health information, such as Body Mass Index, weight, height, and other measures that could be compared to eating behaviors and habits could provide clues as to the actual health status of adolescents rather than the adolescent's self perception. Collecting information about peer influence, taste, and body image may also lead to a better understanding of school food choice.

Summary

The examination of the factors that account for the variance in food choice is critical for students within a school system. The results from this study can offer a great deal of information to the literature surrounding adolescent school food choices. Although weak regression results were found, this information is valuable in terms of what the next right step will be in conducting research on this topic. Evidence within various disciplines suggests that food choice is influenced by environmental, personal and behavioral factors (e.g. French et al., 1999). What is not apparent in the literature is how different factors affect food choice interplay within the ecological environments of the child or the importance of these factors in food choice. Exploring these factors and the interplay between those factors within the child's environments is likely to lead to a better understanding of which specific contexts have the most significance on the variance of students' choice of food at school.

The nutritional health status of today's youth is creating media attention based on obesity. The implications of poor nutrition are long term leading to chronic conditions in adulthood. While families continue to play a significant role in a child's eating lifestyle, ensuring the nutritional integrity of schools should be a top priority for policy-makers. Recently, many school systems have removed unhealthy competitive foods from school grounds or have limited student access.

This study contributes to the literature by examining the role of schools in the nutritional status of adolescents. Ecological theory is a useful framework to guide research in the examination of factors affecting an adolescent's school food choice. While families play an important role, schools have the power to reach a vast majority of American children. School policy change could help improve the nutritional status of children and prevent future health crises.

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THE NEW BLOOM'S TAXONOMY: AN OVERVIEW FOR FAMILY AND CONSUMER SCIENCES

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Educators today struggle with the design and implementation of standards-based curriculums, authentic assessments, and accountability programs. Since publication of Bloom's Taxonomy of Educational Objectives in 1956, numerous changes have occurred in our culture that influence how we think about and practice education. New knowledge of how students learn as well as how teachers plan lessons, teach learners, and assess learning has been incorporated into a revision of Bloom's Taxonomy of Education Objectives. This revision is being incorporated into Career and Technical Education as well as K-12 education in several states. The Family and Consumer Sciences literature provides little published information about the Revised Bloom's Taxonomy (RBT) and its use. Family and Consumer Sciences professionals should become familiar with the new model used for designing, teaching, and assessing education to determine its application for their work.

For over fifty years, Family and Consumer Sciences teacher preparation programs have provided students the framework of Bloom's Taxonomy to categorize subject matter content into learning objectives. Leaving their curriculum and methods classrooms, college students' heads would be spinning with terms such as "cognitive", "psychomotor," and "affective," and their notebooks filled with verb lists for each domain. They would retreat to their desks, tasked with developing educational units and creating terminal and enabling objectives leading to measurable outcomes.

Bloom's Taxonomy is a familiar tool of educators. Although named after Benjamin Bloom, the taxonomy was actually the work of the many individuals hired to help manage the influx of veterans into the education system following World War II. Discharged soldiers, home from fighting World War II, were eligible for the GI education stipend, which paid college tuition, textbook fees, living expenses, and support for the ex-soldier's dependents. The GI stipend enabled many World War II veterans to attend college, flooding campuses with new students even though few new faculty members were hired to educate this deluge of students. In recognition of the life experiences of these veterans, the concept of "credit-by-examination" was developed with support from the Department of Defense (DOD). Even today, the DOD influences education with a program known as Defense Activities for Non-Traditional Education Support (DANTES). The DOD through DANTES (Troops to Teachers, n.d.) supports the "Troops to Teachers" program, which facilitates preparing retiring military personnel to become teachers.

The work that eventually became the Taxonomy of Education resulted from the collective efforts of many including the psychology graduates hired to design, administer, and score tests for college-credit-by-examination, hence their title of "Examiners." The Examiners first met formally following the annual meeting of the American Psychological Association (APA) in 1948. They continued to meet after the annual APA conventions to further their discussions of ways to define and structure intellectual content. They were attempting to make sense of the

multiple educational fields needing tests, with a goal of reducing the complexity of their tasks by categorizing knowledge into hierarchies. Once developed, these hierarchies would provide them with a framework for writing test items in a variety of subjects.

The examiners saw natural scientists use the Kingdoms of Life Taxonomy to organize their biological specimens from simple to complex animals and plants (Spaner, 2000). The examiners believed such a schema would be useful for categorizing the types of knowledge they were trying to measure with their tests (Anderson & Krathwohl, 2001 p. 4). However, the examiners identified three problems involved in creating such a system. First, what they were dealing with was not tangible and could not be examined and dissected as the natural scientists did with their specimens. Second, they feared the creation of a schema might tend to short-circuit educator's thinking and planning. Third, some feared that a classification of learning would result in fragmentation and endless repetition of the existing curriculum (Spaner, 2000).

In spite of these concerns, these psychology-trained examiners decided a classification system represented an appropriate starting place to measure student knowledge and understanding. As psychologists, they wanted a convenient system for describing and ordering test items, examination techniques, and evaluation instruments; and they believed a classification system would enable educators to compare and study educational programming (Anderson, 2006). They also hoped that their system would serve to establish an order for educational goals. By 1956, their efforts resulted in Bloom's Taxonomy of Educational Objectives, named by default since Benjamin Bloom was the first name in the alphabetic list of authors (Anderson, 2006.). This classic work on knowledge levels has influenced curriculum theory and practice for the last fifty years. However, its authors always considered it a work in progress, neither finished nor final (Anderson & Krathwohl, 2001, p xxxvii). The examiners whose efforts led to the development of the original framework expected it to facilitate the exchange of test items among their cooperating institutions.

Bloom's Taxonomy contains three overlapping domains: the cognitive, psychomotor, and affective, also known as knowledge, skills, and attitudes (KSA). The taxonomy was a means to express qualitatively the different kinds of intellectual skills and abilities. The cognitive and affective domains provided a way to organize thinking skills into six levels, from the most basic to levels that are more complex. It was a one-dimensional cumulative hierarchy, with achievement at each lower level considered necessary to move up to the next level (Anderson, 2006). The original development committee produced the hierarchical levels for the cognitive and affective domains, but not for the psychomotor domain. Their explanation for this omission was that they saw little need to teach manual skills to college students (Anderson & Krathwohl, 2001) thus completely overlooking athletics, drama, and applied programs of study such as music. Ten years later, home economist Elizabeth Simpson presented a schema for classifying educational objectives in the psychomotor domain, published in the *Illinois Teacher of Home Economics* and documented within ERIC References (Simpson, 1966). Simpson later became chief of the Curriculum Development Branch, Division of Research and Demonstration with the Bureau of Occupational and Adult Education in the US Office of Education (Simpson, 1973).

Requests were made to Dr. Lorin Anderson, a former student of Bloom's at the University of Chicago, to update the Taxonomy prior to his retirement. At the urging of publishers and education professionals, he agreed to the task, to reflect the enlarged understanding of the teaching and learning processes now available. He and co-editor, the elderly David Krathwohl, one of the editors of the original taxonomy, collaborated with seven other educators to produce the revised Taxonomy. The collaborators agreed that the original taxonomy

was ahead of its time, since alternative frameworks were nonexistent until Gagne's learning outcome classification scheme became available in 1977 and Merrill's *Performance-Content Matrix*, as part of his *Component Display Theory* did not appear until 1983.

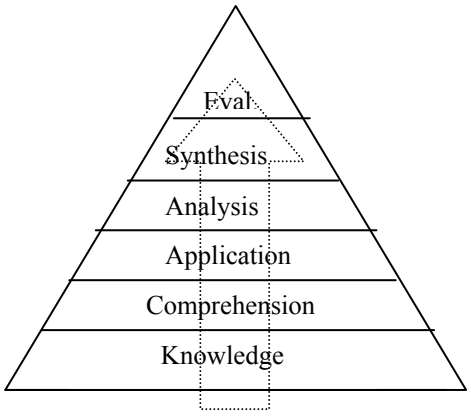
During the revision processes, the editors identified 19 alternative frameworks, developed to supplement, clarify, and improve upon the original Bloom's Taxonomy. The alternative frameworks were examined to determine how they might contribute to the revision of the updated taxonomy. Of these, 11 represented a single dimension like the original taxonomy while eight frameworks represented two or more dimensions as the Revised Bloom's Taxonomy (RBT) does. The *Complete Edition*: *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives* includes a chapter and matrices that explain these alternative systems contributions. The abridged edition, bound in paper and targeted to undergraduates, does not include the chapter that examines and cross-references the alternative frameworks. The alternative frameworks are listed in the Appendix.

Academic Standards and the Revised Bloom's Taxonomy

As America's relative position among educated countries continues to decline, other nations produce more intellectually capable citizens (Peterson, 2002). One attempt to address this decline of intellectual capital in American has been the development benchmarks and educational standards. The standards are important guides for educators because they define the parameters of instruction. Strengthening the alignment of standards with instruction and assessment serves to focus instruction with the intention of making teaching more effective. The RBT is seen as "a tool to help educators clarify and communicate what they intended students to learn as a result of instruction" (Anderson & Krathwohl, 2001, p 23). Incorporated into the RBT are advances in teaching and learning since publication of the original. The term *knowledge* was deemed an inappropriate term to describe a category of thinking and was replaced with the term *remembering.* In addition, the revision reconceptualized the original single dimension taxonomy into two dimensions with both a *Cognitive Process Dimension* and a *Knowledge Dimension*.

Figure 1.

Bloom's Taxonomy and the Revised Bloom's Taxonomy



Old Version—1 dimension

Knowledge Dimension

Cognitive Process Dimension	1. Factual	2. Conceptual	3. Procedural	4. Metacognitive
F. Create				
E. Evaluate				
D. Analyze				
C. Apply			C3	
B. Understand		B2		
A. Remember	A1			

NEW Version – 2 dimensions

The top two levels are essentially exchanged from the old to the new version

Anderson, L. (2006, May)

As illustrated in Figure 1, the RBT is not a cumulative hierarchy, as the original was. Instead, the six stages are viewed as a "cognitive processing" dimension. Our current concepts of learning view students as active participants in the learning process. Students select the information to which they attend and construct their own meanings from the selected information. This constructivist perspective of learning emphasizes how learners *cognitively process* new knowledge as they engage in meaningful learning. Thus, the cognitive process dimension reflects students' cognitive and metacognitive activity as expressed within the opportunities and constraints of the learning setting. "This constructivist process of 'making sense' involves the activation of prior knowledge as well as various cognitive processes that operate on that knowledge" (Anderson & Krathwohl, 2001, p. 38). Other educational taxonomy frameworks reflect the concept of cognitive processing. For example, both *Dimensions of Learning,* (first published in 1988 and revised in 1997 by Marzano and Pickering) and *Understanding by Design* (by Wiggins and McTighe first published in 1998, and expanded in a 2005 second edition) include the concept of cognitive processing, which is basic to our understanding of constructivist learning theory. In addition to the cognitive processing dimension, the RBT authors identified four general types of knowledge: *factual, conceptual, procedural, and metacognitive* which make up the Knowledge Dimension.

Table 1.
The Cognitive Processing Dimension of the Revised Bloom's Taxonomy

Dimension	Examples of the cognitive processes involved
Remember: can the student recall or remember the information?	define, duplicate, list, memorize, recall, repeat, reproduce state
Understand: can the student explain ideas or concepts?	classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase
Apply: can the student use the information in a new way?	choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write
Analyze: can the student distinguish between the different parts?	appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test
Evaluate: can the student justify a stand or decision?	appraise, argue, defend, judge, select, support, value, evaluate
Create: can the student create new product or point of view?	assemble, construct, create, design, develop, formulate, write

Anderson, L. (2006, May)

Within the knowledge dimension is basic information that students must remember to be acquainted with a discipline or solve a problem. Labeled *factual knowledge,* this may include terminology of the discipline or knowledge of specific details. Factual knowledge includes the discrete facts and basic elements that experts use when communicating about their discipline, understanding it, and organizing it systematically; there is little abstraction to factual knowledge.

Because of the explosion of knowledge within all subjects, curriculum designers, textbook authors, and teachers must decide what is critical to include and what is of lesser importance. Many educators now recognize that memorization of discrete facts is not highly

productive knowledge, since so much information today is a few keystrokes away on the internet. Family and Consumer Science teachers often agonize over which facts to teach directly and what to leave out for students to acquire later when they need the knowledge (e.g. housing, clothing, vitamin deficiency diseases not usually seen in the general population, and interpersonal relationships).

Table 2.
The Separate Knowledge Dimension of the Revised Bloom's Taxonomy

Types of Knowledge	Examples
A. Factual Knowledge – the basic elements students must know to be acquainted with a discipline or solve problems in it	
a. knowledge of terminology	▪ Technical vocabulary, chemical elements
b. knowledge of specific details and elements	▪ Personal and family resources, reliable sources of information
B. Conceptual Knowledge – the interrelationships among the basic elements within a larger structure that enable them to function together	
a. knowledge of classifications and categories	▪ stages of pregnancy, forms of business ownership
b. knowledge of principles and generalizations	▪ starch cookery principles, law of supply and demand
c. knowledge of theories, models and structures	▪ color theory, organizational charts
C. Procedural Knowledge – How to do something, methods of inquiry, and criteria for using skills, algorithms, techniques, and methods	
a. knowledge of subject-specific skills and algorithms	▪ Skills used in interior design, whole-number division algorithm
b. knowledge of subject-specific techniques and methods	▪ Interviewing techniques, scientific method
c. knowledge of criteria for determining when to use appropriate procedures	▪ Criteria used to determine what a family can spend on housing. Criteria used to judge the feasibility of using a particular method to estimate business cost
D. Metacognitive Knowledge – knowledge of cognition in general as well as awareness and knowledge of one's own cognition	
a. strategic knowledge	▪ Knowledge of outlining as a means of capturing the structure of a unit subject matter in a textbook, knowledge of the use of heuristics
b. knowledge about cognitive tasks, including appropriate contextual and conditional knowledge.	▪ Knowledge of the types of tests particular teachers administer, knowledge of the cognitive demands of different tasks
c. self-knowledge	▪ Knowledge that critiquing essays is a personal strength, whereas writing essays is a personal weakness; awareness of one's own knowledge level

Anderson, L. (2006, May)

C*onceptual knowledge* is more complex than factual knowledge and includes three subtypes: 1) knowledge of classifications and categories, 2) knowledge of principles and generalizations, and 3) knowledge of theories, models, and structure (Anderson & Krathwohl, 2001). When students can explain the concepts in their own words and transfer information to new situations they have acquired conceptual knowledge. For example, an explanation of how a starch structure may break down in the presence of acid and heat (e.g., lemon meringue pie filling made with cornstarch or flour) would indicate the student has acquired conceptual

knowledge of this cooking procedure. Chamberlain and Cummings (2003) indicate that concepts can be defined and characterized, and that generalizations show relationships among concepts. Classifications and categories of concepts form the basis for principles and generalizations. Principles and generalizations form the basis for theories, models, and structures (Whitehead, 2005). Classification, principle, and theory capture the greatest amount of intellect within widely different disciplines (Anderson & Krathwohl, 2001).

Both factual and conceptual knowledge deal with products, however *procedural knowledge* is often a series or sequence of steps to follow. Procedural knowledge also includes criteria of when to use various procedures and reflects knowledge of different processes. Examples of procedural knowledge could include syntax of an essay, development of a Students Taking Action with Recognition (STAR) event for Family, Career and Community Leaders of America or application of art and design principles in a display board for interior design. Meaningful learning provides students with the knowledge and cognitive processes they need for successful problem solving. Problem solving occurs when a student devises a way of achieving a goal never before accomplished, often by reformulating the problem into a more familiar form, recognizing the similarity, and applying the method in solving for the new knowledge.

The fourth dimension of knowledge is *metacognitive knowledge*, an awareness of and knowledge about one's own thinking. The metacognitive knowledge concept is an emerging milestone in our understanding of learning since the publication of the original taxonomy. Today emphasis is on making students more aware of and responsible for their own knowledge and thought, a paradigm change which is applicable across multiple models including Piagetian, Vygotskian, and situated learning theories (Anderson & Krathwohl, 2001; Marzano, Pickering & Pollock, 2001). However, Flavell (1979) cautioned that the students might need assistance in distinguishing the knowledge of cognition and the monitoring, control, and regulation of cognition. Students may acquire some of the information from their study, but may not have the ability to monitor the learning conditions or make adaptations within their learning process to facilitate acquiring more than superficial understanding and knowledge. One way in which students can be helped to develop their metacognitive knowledge is to ask them to log the amount of effort they make in completing assignments and studying for tests. When they begin to reflect on how much effort they have made, they become aware that often they fail to make the necessary effort in their study, which is reflected in less than optimum achievement (Marzano, Norford, Paynter, Pickering & Gaddy, 2001).

A major contribution that the revised taxonomy can make is in the way educators think about instruction. The intersection of the cognitive process dimensions and the knowledge dimensions can facilitate instructional planning and assessment. When educators plan how they will assess learning, the intersection of the cognitive processing and knowledge dimension can facilitate the selection of learning activities that will provide for modeling and practice using the intended assessment format. Use of the RBT enables educators to specify how they expect students to use specified knowledge and thus provide learning experiences to assist students to reach that cognitive stage. The matrix also streamlines the list of verbs used in generating learning objectives to precise descriptions of the expected outcomes. During the revision, the RBT editors also examined over 500 representative learning and content standards produced by several states to identify the kinds of learning being required in today's classrooms, which was valuable as they conceptualized the Cognitive Processing domain. From this analysis of content standards, they determined that the majority of the learning and content standards are found in cells A1, B2, and C3, as in Figure 1, with the majority of learning requiring students to

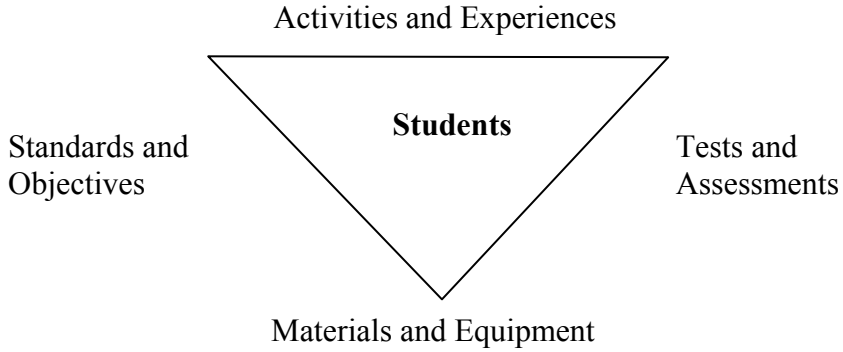
understand conceptual knowledge (BS). With the revised taxonomy, teachers may use "A1, B2, and C3" as a shorthand process for writing objectives. In the original Bloom's Taxonomy, there were at least 229 possible verbs, which could have been used in formulating objectives.

A strategy for Family and Consumer Sciences teacher educators to use when helping pre-service FCS teachers formulate a conceptualization of the RBT is to use the metaphor of a recipe. The standard recipe format consists of the ingredient list followed by the directions, which tell the cook how to combine the ingredients. The ingredient list is the factual knowledge, while the directions or method for preparing the recipe is the procedural knowledge (i.e., the steps to follow). With conceptual knowledge, the cook could make appropriate substitutions of ingredients. Since metacognitive knowledge allows the learner to make strategic modifications in the procedure, the cook with metacognitive knowledge would understand which recipes to avoid when the humidity is high or how to combine the ingredients on hand in the pantry into a finished meal, without referring to a written recipe or menu. These individuals have a metacognitive knowledge about food preparation and meal planning. This metacognitive knowledge is in addition to factual and procedural knowledge generally called upon in preparing recipes and menus for which specific ingredients and foods have been purchased.

Revised Taxonomy and Curriculum Decisions

The structure of curriculum illustrated in Figure 2 is a representation of four fundamental questions: What should be taught? How should it be taught? How should learning be measured? Who are the learners? Because instructional time is limited, decisions must be made concerning what to teach and what to delete from the curriculum. The activities and experiences depend on what materials and equipment are available as instructional resources. The curricular goals and objectives are described in terms of the activities and experiences that can be provided to the students.

Figure 2.
The Structure of Curriculum



Anderson, L. (2006, May)

In the past, it may have been acceptable to have only a few students within the classroom reaching high levels of accomplishment and grade distributions reflect a bell shaped curve. In today's education climate, the expectation is that all students will make adequate yearly progress. Thus, it is critical to align curriculum objectives, teaching, and assessment more closely than before. The educational standards are "mandated objectives that someone, usually a group such

as a professional association or statewide committee, thinks are important" (Anderson & Krathwohl, 2001, p. 19). Like people, educational standards come in a variety of sizes and shapes. Some are more general, others are more specific, and some fall between the extremes. Most standards documents have three levels ranging from general (global), to educational, to specific (instructional); and different terminology is often used for the various levels as illustrated in Table 3.

Table 3
Relationship of Global, Educational, and Instructional Objectives

	Global	Educational	Instructional
Scope	Broad	Moderate	Narrow
Time needed to learn	One or more years (often many)	Weeks or months	Hours or days
Purpose or function	Provide vision	Design curriculum	Prepare lesson plans
Example of Use	Plan a multi-year curriculum	Plan units of instruction	Plan daily activities, experiences and exercises

Anderson, L. (2006, May)

Despite these differences in terminology, the overall structure of standards/objectives is the same across subject matters. Mandated, standardized end-of course assessments require teachers to align their instruction with the standard course of study adopted by a state's department of education or instruction. This is where the RBT will aid educators to insure that all students make adequate yearly progress. The use of the RBT will facilitate a micro-level of alignment since the instructional objective's verb will indicate the specific type of knowledge to be tested. A common format of subject, verb, object (SVO) is used for all objectives including standards. The subject is the student, the verbs include "will," "should," or "may," and define educators' commitment to student learning. The second verb describes one component of our learning intention: recall, illustrate, use, organize, critique, or produce. It is the second verb that asked the important question: "What?" The answer to the WHAT question is the object of learning. The standards/objectives become statements of intended learning (what we expect, wish, and hope students learn because of instruction). The purpose for having objectives is to ensure education positively influences the learners.

Even before publication of the first iteration of Bloom's Taxonomy in 1956, a debate raged about how specific educational goals or objectives should be (Anderson & Krathwohl, 2001, p 20). That debate continues in relation to standards/objectives today. The lock-step nature of objectives that prescribes the same learning outcomes for all students results in criticism that not all that is of value to learn is identified with the specificity of today's standards. Not all students learn the same things from instruction even with specific objectives. "Ancillary learning is always going on" (Anderson & Krathwohl, 2001, p. 21). The heart of the criticism of objectives is that they narrowly define learning outcomes and hence create the risk of simplistic rote learning. Emphasis on authentic learning encourages the use of assessment procedures that permit students to produce varieties of acceptable evidence appropriate for educational objectives (Custer, 2000). Use of the Revised Bloom's Taxonomy facilitates authentic learning

which occurs when the students reach beyond imitation or reproduction of information and are able to analyze and interpret information to solve a problem that can't be solved by information retrieval alone (Brown, 1998).

The Revised Bloom's Taxonomy is a tool to clarify and communicate to teachers, students, parents, and school patrons, the intended outcomes resulting from instruction. A standard format for learning objectives facilitates communication, and identifies the cognitive process and outcomes for instruction. The emphasis is on explicit and indisputable statements of intended cognitive outcomes. The revised framework no doubt will be used in many ways, by many, but not necessarily all educators, just as some declined to use the first iteration.

In spite of being available since 2001, only now is the revised taxonomy on the horizon for educators. Science and Family and Consumer Sciences secondary curriculum developers in at least two states along the eastern seaboard are using the RBT to more precisely formulate examination questions, define performance indicators and develop rubrics for authentic assessments, as well as to insure that what is measured by the mandated end-of-course tests is taught.

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Appendix

Alternative Frameworks compared in the preparation of the Revised Bloom's Taxonomy

One-dimensional Classification Systems

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