

TAFCS RESEARCH JOURNAL

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FROM THE EDITOR

Thank you to everyone who played a role in the successful compilation of the 2008 *TAFCS Research Journal*. I appreciate the dedication of the reviewers who read multiple manuscripts which were submitted for publication. I am thankful to the various researchers/authors who submitted quality work. The bright future of family and consumer sciences is fueled by the research interests of the many professionals who work within the diverse areas of the profession.

The fifteen articles that are included in this issue cover a broad spectrum of interests and include the five areas of the discipline that make up the membership of TAFCS.

It has been a pleasure to work on this project with so many enthusiastic and devoted TAFCS members. I encourage everyone to serve the profession and continue to participate as a researcher, author, and/or reviewer for the next publication. Information and guidelines for authors and reviewers may be found at www.tafcs.org.

Anne VanBeber, PhD, RD, LD, CFCS
Vice President for Academic Affairs

TAFCS MISSION STATEMENT

The TAFCS Research Journal is a publication of the Texas Association of Family and Consumer Sciences (TAFCS), a state affiliate of the American Association of Family and Consumer Sciences (AAFCS). The mission of AAFCS is to effect the optimum well-being of families and individuals by:

- Empowering the members to act on continuing and emerging concerns,
- Focusing the expertise of members for action on critical issues, and
- Assuming leadership among organizations with mutual purposes.

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The Power of Dress Rituals: Exploring Superstition among Generation Y Female Students

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Background

The ritual of superstition is a mechanism to counteract the psychic strain of uncertainty and anxiety in dealing with future outcomes (Neil, 1980 cited in Todd & Brown, 2003). The Generation Y (GEN Y) demographic is considered undeniably empowered with self-confidence stemming from optimism and ambitious idealism; having been raised in a relative cocoon of economic prosperity riding on the wave of technological advancements (Huntley, 2006). However, there is speculation as to whether “GEN Y is more capable than GEN X at facing [current] problems—or more effective at ignoring them” (Huntley, 2006, p. 9). This study explores the GEN Y female student athlete and whether the mystical ritual of superstition guides their daily dress routines.

Female intercollegiate athletes represent a truly unique segment whose propensity towards socialization in sports stems from their socioeconomic background, siblings, family structure, previous school experience, and urbanicity (Videon, 2002). The rise of female participation in the sports arena has been cited as a significant influence on market trends (Bradish, Lathrop, Stevens, & Sedgwick, 2000). Sports organizations recognizing this market potential have employed considerate design strategies directed at “women’s sensitivities toward quality, values, feelings, and emotional well-being” (Bradish et al., 2000, p. 186). An understanding of the superstitious dress rituals of the female GEN Y athlete complements consumer research on the symbolism inherent in these specific products (Rook, 1985).

Superstition, as a core behavior based upon an individual’s psyche, will ultimately impart key behavioral motivations in regards to dress. Superstitious behavior is found in numerous theoretical applications to consumer behavior (Kramer & Block, 2007; Kover, 1998; Mowen & Carlson, 2003; Ogilvie, Ryan & Pettigrew, 2000; Quandt, 1956; Rook, 1985), with a significant presence in the sports arena. There is extensive analysis on its impact on general behavior and

routine of athletes (Burger & Lynn, 2005; Gregory & Petrie, 1975; Neil, 1982; Overend, 2004; Pronin, Wegner, McCarthy, & Rodriguez, 2006; Rudski, 2001; Schippers & Van Lange, 2006; Todd & Brown, 2003), as well as significant psychological implications for the use of apparel for females (LaBat & Delong, 1990; Littrell, Damhorst & Littrell, 1990); however, there is no current research on the specific impact superstition has on the dress behavior of GEN Y female student athletes.

Purpose

The phenomenal connection between athletes and their sport interests, as well as the personal nature of superstition, necessitated an intimate exchange of information through focus group discussions. The absence of previous research encouraged a less structured focus group environment where respondents interacted freely. Thus, the purpose of this exploratory study was to generate theoretical ideas to guide future in-depth qualitative studies, by identifying: (a) the individualized dress routine, and (b) the impact of superstition on the dress routine of the GEN Y female student athletes.

Methodology

The focus group moderator used a script of 15 questions addressing the following broad topics: (a) personal sport experiences, (b) superstitious rituals, and (c) individual dress. A brief questionnaire was constructed to categorize demographic information and describe the general dress routines of student athletes. To maintain homogeneity and ease of discussion, the focus group consisted of a woman’s softball NCAA Division I team at a southwestern university as the convenient sample of student athletes ($n = 22$). An assistant was present as an impartial observer to take additional notes. Afterwards, the moderator and assistant reviewed the recorded discussion and questionnaire data and cross-referenced notes to determine emerging themes (Miles & Huberman, 1984).

Results

Sample Characteristics

The sample was predominantly Caucasian (77.3%) with a median age of 19.9. Overwhelmingly, athletes

(81.8%) reported that they were superstitious in terms of their athletic performance while more than half of the sample (54.4%) performed a specific dress ritual prior to a game. Examples of ritual dress behavior included wearing lucky armbands, specific hair accessories, and undergarments to match uniforms. Seventy-seven percent of the student athletes performed other non-dress related rituals to improve their performance such as eating specific foods, listening to favorite songs, repeating team chants, and offering religious prayers. Over half of the athletes (59.1%) considered themselves brand conscious; however, most athletes (77.3%) indicated that branded merchandise did not play a role in their dress routine. The most popular brands associated with women's softball included Under Armour, Nike, Adidas, Ringor, Schutt Sports, Reebok, Mizuno, Louisville, Wilson, and Rawlings.

Discussion Themes

Based on the qualitative discussion, three themes emerged including *individual*, *habitual*, and *familial* superstitions. The process of dressing was especially important to enhance athletic performance as evidenced by comments such as, "I always put my clothes on in a certain order" and "I must put my right leg in first, then my left leg."

There was a strong connection between individual performance and overall appearance. One athlete commented, "If I don't look good then I don't think I am going to play good, it is the whole package that counts." Another stated, "If my hair doesn't look good then I'll redo it, even if it takes 15 minutes." These statements correlate to the view that apparel has a multifaceted relationship to psychological well-being among women (Fowler, 1999).

Many rituals were based on habit with the goal of repeated success. One athlete continued to wear an arm brace after suffering an injury in eighth grade. She stated, "I don't know why I wear it. I have to have it." This predilection of rituals associated with positive outcomes is consistent with previous research on superstitious behavior. According to Rudski (2001), superstitions are often motivated by the need to reinforce the temporal contiguity of known outcomes to counteract the anxiety of having to confront the unknown future (Rudski, 2001).

Familial behavior exhibited by these athletes may be partly indicative of their particular generational character. The folding of a pant cuff was specific to the instructions passed on at an early age by an athlete's father. Another female athlete sought the familiar comfort of a pre-game brand-specific ritual begun by her mother at the age of ten. Previous research has found that parents have a significant

impact on the decision-making of GEN Y females on consumption of sporting goods (Bradish et al., 2000). In fact, Weiss (2003) reports a "split personality" among the challenging GEN Y consumer segment. They are pronounced individuals who often choose to reside with their parents upon graduation, retaining a physical as well as an emotional bond.

Implications for Family and Consumer Sciences

Family and consumer science (FCS) professionals play an important role as they assist in the development of future industry leaders. They must stimulate and nurture sensitivity towards consumer needs and innovative thinking necessary to compete within the dynamic marketplace. This study contributes to the understanding of the GEN Y female student athletes' individualized dress routines and its' impact on consumer decision making. Intercollegiate student athletes are a particularly unique segment of the collegiate population, as they struggle in the midst of athletic, academic, and social pressures (Miller & Kerr, 2002). The psychological benefits of ritual dress were strongly felt among the GEN Y female student athletes. As the presence of the female sports consumer strengthens in the market, FCS professionals have an opportunity to support further research and motivate interest in regards to the sensitivities of this segment.

Interestingly, many GEN Y female student athletes shared their ritual behaviors and superstitions on the confidential, written survey. However, their participation in the discussion was initially hesitant, and only through group interaction were examples of behavior clarified. It is important to recognize the potential influence of the size of the focus group, the personal and competitive nature of NCAA athletics, and the presence of the head coach on the research findings. The recommendation is to collect data for future qualitative studies through personal in-depth interviews and expand to other collegiate teams (Bleak & Frederick, 1998; Childers & Rao, 1992).

References

- Bleak, J. L. & Frederick, C. M. (1998). Superstitious behavior in sport: Levels of effectiveness and determinants of use in three collegiate sports. *Journal of Sport Behavior*, 21(1), 1-15.
- Bradish, C., Lathrop, A. H., Stevens, J., & Sedgwick, W. (2000). Understanding the female sport consumer: A North American perspective. *Marketing in a Global Economy Proceedings*.
- Burger, J. M. & Lynn, A. L. (2005). Superstitious behavior among American and Japanese professional baseball players. *Basic and Applied Social Psychology*, 27(1), 71-6.

- Childers, T. L. & Rao, A. R. (1992). The influence of familial and peer-based reference groups on consumer decisions. *Journal of Consumer Research*, 19, 198-211.
- Fowler, D. (1999). The attribute sought in sports apparel: A ranking. *Journal of Marketing Theory and Practice*, 7(4), 81-88.
- Gregory, C. J. & Petrie, B. M. (1975). Superstitions of Canadian intercollegiate athletes: An inter-sport comparison. *International Review for the Sociology of Sport*, 10(2), 59-68.
- Huntley, R. (2006). The World According to Y: Inside the New Adult Generation. *Crows Nest, Australia: Allen & Unwin*.
- Kover, A. J. The sublime and consumer behavior: Consumption as defense against the infinite. *Consumption, Markets, and Culture*, 2(1), 57-98.
- Kramer, T. & Block, L. (2007). Conscious and nonconscious components of superstitious beliefs in judgment and decision making. *Journal of Consumer Research*. Retrieved February 9, 2008 from <http://www.journals.uchicago.edu>
- LaBat, K. L. & DeLong, M. R. (1990). Body cathexis and satisfaction with fit of apparel. *Clothing and Textiles Research Journal*, 8(2), 43-48.
- Littrell M. A., Damhorst, M. L., & Littrell, J. M. (1990). Clothing interests, body satisfaction, and eating behavior of adolescent females: Related or independent dimensions? *Adolescence*, 25(97), 77-95.
- Miller, P. S. & Kerr, G. (2002). The athletic, academic, and social experiences of intercollegiate student-athletes. *Journal of Sport Behavior*, 25, 346-67.
- Mowen, J. C., & Carlson, B. (2003). Exploring the antecedents and consumer behavior consequences of the trait of superstition. *Psychology & Marketing*, 20(12), 1045-1063.
- Neil, G. I. (1982). Demystifying sport superstition. *International Review for the Sociology of Sport*, 17(1), 99-124.
- Ogilvie, M., Ryan, M. M., & Pettigrew, S. (2000). Millennium myths: Investigating the symbolic behavior of consumers at the turn of the 21st century. Paper presented at ANZMAC--*Visionary Marketing for the 21st Century: Facing the Challenge*, Sydney, NSW.
- Overend, A. (2004). Modern sport and the quest for performance: Science or superstition? (Thesis, Queens University at Kingston, 2003). *Masters Abstracts International*, 42(04), 57.
- Pronin, E., Wegner, D. M., McCarthy, K., & Rodriguez, S. (2006). Everyday magical powers: The role of apparent mental causation in the overestimation of personal influence. *Journal of Personality and Social Psychology*, 91(2), 218-31.
- Quandt, R. E. (1956). A probabilistic theory of consumer behavior. *The Quarterly Journal of Economics*, 70(4), 507-36.
- Rook, D. W. (1985). The ritual dimension of consumer behavior. *The Journal of Consumer Research*, 12(3), 251-64.
- Rudski, J. (2001). Competition, superstition, and the illusion of control. *Current Psychology*, 20(1), 68-84.
- Schippers, M. C., & Van Lange, P. (2006). The psychological benefits of superstitious rituals in top sport: A study among top sportspersons. *Journal of Applied Social Psychology*, 36(10), 2532-2553.
- Todd, M., & Brown, C. (2003). Characteristics associated with superstitious behavior in track and field athletes: Are there NCAA divisional level differences. *Journal of Sports Behavior*, 26(2), 168-187.
- Weiss, M. J. (2003). To be about to be. *American Demographics*, 25, 28-36. Videon, T. M. (2002). Who plays and who benefits: Gender, interscholastic athletics, and academic outcomes. *Sociological Perspectives*, 45, (4), 415-44.

Fashion Blogs: Online Communities and the Family

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Introduction

Technology has permeated family life in the 21st century. The internet has changed communication as we know it, particularly through the increasing use of blogs, which enable individuals to form online communities throughout the world, increasing our sense of global interdependence. A weblog, or blog, is comprised of “frequently modified web pages in which dated entries are listed in reverse chronological sequence,” (Herring, Scheidt, Wright, & Bonus, 2005). Blogs have become a popular forum for all types of issues related to the family, including fashion. The purpose of this paper is to provide a brief overview of some of the most popular fashion-related blogs and to examine the main issues related to blogs, including their implications for Family and Consumer Science educators.

Blogs Exist for Each Member of the Family

Fashion Blogs for Mothers. “Mommy blogs” are written by mothers about issues relating to children and family. A survey by E-marketer.com reported that 32.2 million, or 18.4%, of US internet users are females with children under 18 in the house, and predicts that figure will rise to 36.6 million users by the year 2010 (Thompson, 2007). Blogads, a blog advertising company, describes the average consumer of mommy blogs as a 29-year-old female with annual income of \$70,000 who looks at five blogs per day and spends four hours per week on them (Thompson, 2007). Women identified as having influence on the products, brands and services their friends and family buy or use have been given the title of “Momfluentials.” This group tends to be avid blog readers and authors: 94% of momfluentials find what they read in blogs credible; 92% say they affect the products others buy; 90% forward news information to others; 45% have their own blogs (“Media: Research – Mom-fluentials”, 2006).

A large number of mommy blogs focus on fashion for women and their children. Popular fashion mommy blogs include Baby Chic 101 (www.babychic101.com) which shows what celebrity children are wearing and what products they are using with information on how to obtain them. Another popular website is Momfinds (www.momfinds.com), which provides “hip finds for moms and

kids” and includes topics such as “maternity party dresses” and “baby shoes buying guide” mixed in with more general interest topics about traveling with children and babyproofing one’s home. Another blog, The Daily Stroll (www.thedailystroll.com) is written by “One mom: bringing you modern goods for baby+toddler+shelter – since 1994.”

Fashion Blogs for Children. Since blog readers are such a desirable market segment, some blogs incorporate online shopping in their content. The blog Stylephile for Kids (<http://stylephileforkids.blogspot.com>) is affiliated with the online children’s store Trendy Togs (<http://www.trendytogs.com>). Stylephile for Kids blog entries are frequently about fashions which can be bought by clicking on the Trendy Togs link on the blog’s homepage.

Fashion blogs for children have become so popular that even fashion blogs originally intended for adults have added blogs about children’s products. Manolo’s Shoeblog (www.shoeblogs.com), originally a blog dedicated to shoes for adult females, recently expanded to include Teeny Manolo, (<http://teenymanolo.com>) dedicated to children.

Fashion Blogs for Teens. Teens are the most frequent users of online networking. According to Seese (2006) 58.3% of network users are under 19. Many teen blogs incorporate fashion as a part of their content, but few are dedicated entirely to fashion. Individuals’ blogs are extremely personal, with links to personal pages, photos, and stories about friends. Individuals have used their blogs as a stepping stone into other kinds of media and become identified as authorities even with no formal training. Two notable examples are Teenfashionista (<http://teenfashionista.blogspot.com>) and I am Fashion (<http://iamfashion.blogspot.com>). Teenfashionista is a nineteen-year-old college student who in addition to her musings on fashion collections, has links on her blog to her MySpace page and her resume. I am Fashion is a site by two university students who comment on all forms of fashion and through their blogs have contributed to other forms of media.

Fashion Blogs for Fathers. A few “Daddy blogs” do exist. Many seem determined to prove that being a

dad is still cool or hip. Popular blogs such as Daddy Types (<http://daddytypes.com>), The Blogfathers (theblogfathers.com) and Thingamababy (<http://www.thingamababy.com>) look at issues related to parenting from a uniquely male perspective.

Implications of Blogs for FCS Educators

As marketers become more savvy, they are using blogs to promote their products. Even small blogs now have sponsors and advertisers, such as an exclusive deal between Mommy Track'd (www.mommytrackd.com) and Gap. The blog Modern Mom (www.modernmom.com) teamed up with Essie nail polish to offer a Modern Mom color (Thompson, 2007). Bloggers receive free child-related goods and services from companies hoping for a mention on a well-visited site. Some companies offer rewards for talking up products or even pay bloggers directly. This may diminish their credibility with readers.

Blogs have negatives associated with them, such as contributing to narcissism and impairing personal relations with others. Spending too much time in front of the internet can affect development of creative and social skills. Safety is a major concern with children giving out too much information online. Many children post photos, give out their names and addresses, what school they attend and sometimes phone numbers without their parents' knowledge. The Children's Digital Media Center reported two-thirds of children provide age and a first name, 60% list location and contact information, and one in five give a full name (Seese, 2007). There are also childhood obesity and health issues. Many kids are "addicted" to the internet which keeps them physically inactive. In response to these issues, products such as Eyetimer, which gives parents control over how long their children stay in front of the computer by allowing them to limit their online time, have been developed (Azzoulay, 2004). Family and consumer science educators need to be aware that blogs are a popular and substantial source of information for their students and may choose to incorporate content from blogs into their own educational programs, while informing students of their potential biases and shortcomings.

In conclusion, blogging as a means of communication will continue to expand, bringing individuals together in online communities. As the medium grows, so will its impact on consumers and

families, and so too will its importance as a field of serious study.

References

- Azzoulay, J. F. (2004, October 1). Wired! Meet today's techno teens & kids. *Children's Business*. Retrieved September 26, 2007 from Galegroup Infotrac General Onefile database.
- Herring, S. C., Scheidt, L. A., Wright, E. & Bonus, S. (2005). Weblogs as a bridging genre. *Information Technology and people*, 18(2), 142-152.
- Media: Research – Mom-fluentials. (2006, May 29). *PR Week*. Retrieved September 27, 2007 from Galegroup Infotrac General Onefile database.
- Seese, G. (2006 May-June). Who else knows where your children are? *Catalyst*.
- Thompson, S. (2007, February 26). Mommy blogs: A marketer's dream; Growing number of well-produced sites put advertisers in touch with an affluent, loyal demo. *Advertising Age*. Retrieved September 27, 2007 from Galegroup Infotrac General Onefile database.

Instructional Strategies for Diverse Learners

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Accommodating the needs of multicultural and multilingual learners is one of the biggest challenges facing today's teachers (Hodges, 2001). In the past ten years the number of students who speak a language other than English has increased 95% (National Clearinghouse for English Language Acquisition, 2004) and it is predicted that the number of students who speak a native language other than English will account for about 40% of the school-age population by 2040 (Berliner & Biddle, 1995). While the number of culturally and linguistically diverse students has increased, most teachers report that they have had little or no preparation for working with diverse students, particularly English language learners (Carrier, 2005). The reality of a diverse student population is that teachers, the majority of whom are Caucasian, must meet the needs of students who do not share the same language, culture, or national origin (Crandall, Jaramillo, Olsen, & Peyton, 2001).

The research and scholarly literature on culturally responsive teaching states that ethnicity and culture has a significant influence on how students learn (Snowman & Biehler, 2003; Wlodkowski & Ginsberg, 1995). Due to cultural and social circumstances diverse learners have unique needs and varied preferences for learning (Anderson, 1988). Specific strategies have been identified to help accommodate the learning habits and styles of students from racial, ethnic, and culturally diverse backgrounds (Curtin, 2006; Lessow-Hurley, 2003; Saravia-Shore & Garcia, 1995). Strategies including *hands-on learning experiences*, *cooperative learning*, *peer tutoring*, and *the use of visuals* have been found to be highly effective with students from diverse backgrounds and cultures (Allison & Rehm, 2007; Carrier, 2005; Saravia-Shore & Garcia, 1995). These strategies support diverse modes of learning as they promote interaction and cross-cultural understanding and engage a variety of senses to help make learning more meaningful (Carrier, 2005; Curtin, 2006; Kato, 1994). This review will focus on each of the strategies identified above and offer suggestions for family and consumer sciences (FCS) teachers.

Effective Instructional Strategies

Hands-on Learning Experiences

Research that focuses on diverse learners has found that culturally and linguistically diverse students tend

to be tactile, kinesthetic learners (Curtin, 2006). Therefore, hands-on instructional materials and teaching aids help to accommodate the needs of diverse learners by giving them opportunities to interact and manipulate objects and equipment (Bruno, 1982; Kline, 1995). Due to the nature of FCS courses, laboratories, demonstrations, simulations, and other experiential activities are frequently used in FCS classes and can be particularly beneficial to students from diverse backgrounds.

Cooperative Learning

Cooperative learning is a teaching approach frequently used in FCS classrooms and a strategy that is supported by a wealth of research (Slavin, 1991; Johnson & Johnson, 1990). Recent attention has been given to this strategy as it has been found to be highly effective in multicultural and multilingual classrooms (Crandall, et al., 2001; Curtin, 2006). In cooperative learning, students are assigned to a heterogeneous group usually comprised of four or five students and work towards a common goal. Because they are required to interact and communicate with one another on an assigned task, they develop cross-cultural understanding and sensitivity towards others (Banks, 2001). In cooperative learning groups, students whose native language is not English have opportunities to practice English and improve their linguistic and communication skills (Crandall, 1999; Saravia-Shore & Garcia, 1995). In culturally and linguistically diverse classrooms, FCS teachers can utilize cooperative learning techniques such as think/pair/share, jigsaw, and round robin. Students not only benefit academically but also improve socialization skills as they interact with students from different ethnic and linguistic groups (Kimberly, 1999).

Peer Tutoring

Peer tutoring has been rated as a highly effective strategy in multicultural and multilingual classrooms (Vaughn, Bos, & Schumm, 2003). Educational and social benefits have been identified for both the tutor and the tutee when students from different abilities and backgrounds are paired together as a team. As they become resources for each other, students interact, converse, and share ideas while developing cross-ethnic friendships (Saravia-Shore & Garcia, 1995). Peer tutoring is particularly beneficial when English-speaking students are assigned to assist

English language learners (Crandall, et al., 2001) and has been shown to be especially helpful with Hispanic and Native American students due to cultural values that emphasize cooperation and mentoring (Snowman & Biehler, 2003; Vaughn, Bos, & Schumm, 2003). In FCS classes, teachers can implement peer tutoring to practice skills, solve problems, research information, and review lesson content. Peer tutoring can also be used to enhance the development of leadership and interpersonal skills, self-confidence, and self-esteem; qualities and skills that are emphasized and taught in the FCS curriculum.

The Use of Visuals

Visuals are extremely important when working with students whose first language is not English (Carrier, 2005). Because diverse students are not auditory learners (Curtin, 2006), visuals provide a stimulus that can be universally understood and help attach meaning and mental images to words and concepts (Curtis & Bailey, 2001). Furthermore, visuals such as pictures, photographs, drawings, and diagrams help to bridge the language barrier in multicultural classrooms. Because diverse learners are often in various stages of proficiency in the English language, FCS teachers must realize that visuals are necessary instructional tools to present information using non-verbal means of expression. Teachers can develop visuals such as bulletin boards, graphic organizers, and handouts that include pictures and symbols or encourage students to construct their own visuals to convey information such as drawings and posters.

Conclusion

The rapidly growing diversity in U.S. classrooms presents significant challenges to educators. All teachers must be prepared to implement strategies that recognize and accommodate the needs of multicultural and multilingual learners. Instructional strategies including hands-on learning, cooperative learning, peer tutoring, and the use of visuals have been supported in the scholarly literature on culturally responsive teaching. These are also strategies that are frequently used in FCS classrooms. While they have been found to be effective with diverse learners, they are beneficial for every student and will become more valued and important as classrooms become more diverse.

References

Allison, B., & Rehm, M. (2007). Effective teaching strategies for middle school learners in multicultural, multilingual classrooms. *Middle School Journal*, 39(2), 12-18.

Anderson, J. A. (1988). Cognitive styles and multicultural populations. *Journal of Teacher Education*, 2-9.

Banks, J. (2001). *Cultural diversity and education: Foundations, curriculum, and teaching* (4th ed.). Boston: Allyn & Bacon.

Berliner, D. C., & Biddle, B. J. (1995). *The manufactured crisis: Myths, fraud and the attack on America's public schools*. Reading, MA: Addison Wesley.

Bruno, A. (1982, October). Hands-on wins hands down. *Early Years*, 13(2), 60-67.

Carrier, K. A. (2005, November). Key issues for teaching English language learners in academic classrooms. *Middle School Journal*, 37(2), 4-9.

Crandall, J. A. (1999). Cooperative language learning and affective factors. In J. Arnold (Ed.), *Affective language learning* (pp.226-245). Cambridge England: Cambridge University Press.

Crandall, J. A., Jaramillo, A., Olsen, L., & Peyton, J. K. (2001). Diverse teaching strategies for immigrant children. In R. W. Cole (Ed.), *More strategies for educating everybody's children* (pp.33-71). Alexandria, VA: Association for Supervision and Curriculum Development.

Curtin, E. M. (2006, January). Lessons on effective teaching from middle school ESL students. *Middle School Journal*, 37(3), 38-45.

Curtis, A., & Bailey, K. M. (2001). Picture your students talking: Using pictures in the language classroom. *ESL Magazine*, 4(4), 10-11.

Hodges, H. (2001). *Overcoming a pedagogy of poverty*. In R. W. Cole (Ed.), *More strategies for educating everybody's children* (pp. 1-9). Alexandria, VA: Association for Supervision and Curriculum Development.

Johnson, D. W., & Johnson, R. T. (1990, December/January). Social skills for successful group work. *Educational Leadership*, 47(4), 29-33.

Kato, S. L. (1994). Promoting creativity in culturally diverse classrooms. *Journal of Family and Consumer Sciences*, 86(4), 17-21.

Kimberly, M. (1999). Cooperative learning experiences: Meeting the needs of culturally diverse students. *Journal of Family and Consumer Sciences*, 91(2), 50-52.

Kline, L. W. (1995). A baker's dozen: Effective instructional strategies. In R. W. Cole (Ed.), *Educating everybody's children: Diverse teaching strategies for diverse learners* (pp. 21-43). Alexandria, VA: Association for Supervision and Curriculum Development.

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An Inside View of Recruitment and Retention of FCS Secondary Teachers

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Background

The field of Family and Consumer Sciences (FCS) education continues to face issues that are critical: 1) continuing shortage of qualified teachers, 2) attracting a sufficient number of individuals to the field, 3) mentoring beginning teachers with classroom and curriculum issues, and 4) retaining current FCS educators. In addition, FCS educators and their proponents have the additional challenge and the necessity to make evident the breadth, value, and relevance of today's FCS curricula to those outside of the discipline who are key to providing support that could rectify complex problems facing this specialized area of study.

The reality of regional and national teacher shortages among FCS educators has been well documented over the last several years (Miller & Meszaros, 1996; American Association of Family & Consumer Sciences, 1999; Bull & Cummings, 2002; Tripp, 2006). The persistence of the problem was highlighted in a 2004 national survey initiated by the National Coalition for Family and Consumer Sciences Education examining the 2002 – 2003 academic year (Werhan & Way, 2006). Findings related to the teacher shortage showed that only six states reported a balance between supply and demand of FCS teachers.

Purpose

Recruitment of new, well-qualified, skilled teacher candidates and the retention of experienced teachers remain the current approaches to solving the teacher shortage dilemma. Thus, the primary purpose of this research was to determine current teacher insights and recommendations for effective teacher recruitment and retention.

Sample and Methodology

A survey was developed and validated in California for the purpose of collecting data from current FCS teachers regarding issues and trends in the field (Tripp, 2006) and adapted for use in Texas. The long-term plan was to use this survey in various geographical regions of the country to compile information that can be generalized to the nation and reflect regional differences.

For the California and Texas samples, permission to conduct the studies was obtained from the primary author's Institutional Review Boards. With both groups, a cover letter was attached, and a return envelope was provided. Survey questions were categorized by demographics, instructional effectiveness, need for specific areas of coursework, professional satisfaction, retirement plans, recruitment and retention insights, and in Texas the areas of AchieveTexas implementation and TEKS usage were added.

The survey was piloted with 313 teachers who were members of California's home economics teachers' professional organization. Two hundred and one usable surveys (64%) were returned. The survey was modified for organizational structure differences and replicated with approximately 700 Texas FCS teachers attending the 2007 Tri-Cluster Conference. Two hundred and twenty-three usable surveys (32%) were returned.

Much of the survey called for the use of descriptive statistical techniques for compiling and analyzing the data. Frequency distributions, percentages, means, and standard deviations were employed. In addition, content analysis techniques were used to categorize the comments teachers made to open-ended questions. One of the authors objectively analyzed written comments for common, repetitive themes.

Results and Discussion

The most common profile of both the California and Texas FCS teacher that emerged from those responding to the surveys was a White (84% in California, 88% in Texas) female (100% in California, 98% in Texas) aged 51 – 60 (56% in California, 43% in Texas). Those who had taught 1 – 5 years and those who had taught 25 – 30 years represented the same proportion (17%) of the California sample. In Texas, however, those who have taught 1 – 5 years were the highest percentage of respondents (19%), followed closely by those who had taught 6 – 10 years (18%).

When asked for written comments and suggestions regarding the recruitment and/or retention of FCS teachers, respondents' answers followed several

themes. Content analysis revealed that primary recruitment suggestions included that secondary teachers: 1) need to do a better job of publicizing and promoting the program to students, parents, school administrators and counselors, and the community (9% in California, 14% in Texas), and 2) should manage an active FCCLA chapter (4% in Texas). For retention of current teachers, the primary themes centered around: 1) securing administrative and counselor support of the program (14% in California, 13% in Texas), 2) promoting the FCS program as vital to the success of students and the school (1% in California, 14% in Texas), and 3) obtaining a mentor (1% in California, 7% in Texas). For both recruitment and retention, a higher salary for teachers was seen as crucial in Texas (14% of respondents).

Teachers' input was also solicited for suggestions that would be beneficial for new FCS teachers. Content analysis revealed that the major recommendation from both sample groups was the need for a mentor for new teachers (8% in California, 18% in Texas). Following that, many teachers said that being an FCCLA advisor (12% in both states), having fun and avoiding burnout by balancing work and family life (8% in California, 6% in Texas), keeping local school administrators and counselors updated with departmental activities (6% in both states), being active in the professional organizations (2% in California, 6% in Texas), and attending professional development conferences (2% in California, 6% in Texas) were all critical to success as a new teacher.

Texas FCS teachers were also asked to provide comments about the implementation of the AchieveTexas initiative. Three themes emerged from the content analysis. First, 26% of those adding comments expressed the need for more information about the program before implementation. Also stressed by 13% of the teachers was the perspective that the initiative would be great for FCS, and that teachers needed to ensure that administrators and counselors are aware of and supportive of the initiative.

Conclusions and Implications

FCS teachers in California and Texas had definite opinions regarding issues critical to dealing with the documented shortage of teachers. Specific themes emerged from the content analysis of the teacher responses to open-ended questions related to recruiting and retaining teachers.

Experienced teachers agreed that promoting and publicizing the department's activities can be very beneficial for recruitment purposes, for new teachers, and for retaining current teachers. By having current

and accurate information available, the various audiences are more likely to support the teacher and the students. Keeping administrators and counselors aware of departmental activities was specifically recommended.

Mentoring can provide needed support along with the transmission of institutional and instructional knowledge, and recommending best practices for teaching. This is especially true of teachers who have been certified through alternative licensure programs (Lichty & Robles, 2003).

Being an active FCCLA advisor was also strongly encouraged. Working with students in this co-curricular FCS leadership organization both strengthens programs and benefits participants. It can be an excellent method for recruiting new professionals into the field and is beneficial for new FCS teachers.

Teachers in the field also suggested that new FCS teachers need to avoid burnout during their first few years by having fun and balancing work and family life.

In Texas, FCS teachers were advised to gain in-depth knowledge of the AchieveTexas initiative, and keep their administrators and counselors aware of its opportunities, as well. Implementing AchieveTexas was reported as being a positive step for FCS.

A strong and ongoing effort to recruit and retain FCS teachers is required in order to reverse the continuing shortage of qualified teachers. FCS teachers have provided valuable insights that need to be developed, as they intimately know what is needed to be successful in the field. Additional research is needed, as well, to ascertain which of the current recommendations will be most effective and to continue to delineate ways and means of improving recruitment and retention efforts utilizing input from this valuable experiential base.

References

American Association of Family and Consumer Sciences (AAFCS). (1999). *Recruiting family and consumer sciences educators*. Alexandria, VA: Author.

Bull, N.H., & Cummings, M. (2002). Meeting the future need for family and consumer science educators in Connecticut. *Journal of Family and Consumer Sciences Education*, 20(2), 30-36.

Lichty, M., & Robles, D. (2003). The teaching experiences of new FCS emergency permit teachers. *Journal of Family and Consumer Sciences Education*, 21(2), 1-17.

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Significance of the Texas FCS Distance Education Alliance to Texas Certification Students

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Background

Studies conducted recently indicate that dire shortages of qualified secondary Family and Consumer Sciences (FCS) teachers continue to exist nationwide, with the greatest hiring challenges found in rural areas (Mimbs, 2002; Bartley & Sneed, 2004; Tripp, 2006; Werhan & Way, 2006). When credentialed FCS teachers are not available, administrators must choose between hiring a teacher trained in another content area and closing the FCS program (Tripp, 2006; Werhan & Way, 2006). At the same time, enrollments in university FCS certification have decreased over the past several years (White, Tripp & Bureson, 2007).

These trends are also evident in Texas. A study conducted by the Texas Education Agency and the State Board for Educator Certification in the late 1990s revealed that approximately 55% of FCS teachers in Texas would be eligible for retirement by 2011. The study also discovered that 33% of FCS teachers were not certified in the discipline. Further, enrollments in university FCS certification programs had decreased, often due to work-family-course scheduling conflicts and/or lack of geographical proximity to the university, making it increasingly difficult to regularly offer the courses required of certification students (Family and Consumer Sciences Distance Education Alliance, 2006).

These concerns led to the formation of the Texas Family and Consumer Sciences Distance Education Alliance Task Force, a coalition of the Texas Education Agency (TEA) and universities in Texas that offered FCS certification programs, with the goal of addressing the critical FCS teacher supply, as well as demand, preparation, and certification issues. A major outcome was a project funded by TEA that established the FCS Distance Education Alliance (FCS Alliance), an inter-institutional consortium that provided online courses required of FCS certification majors. The universities entered into agreements whereby students enrolled at one of the member institutions could take an online course being offered

by another participating university to help meet degree requirements in a timely manner (McGinnis, 2004).

Purposes

Since 2001, the number of FCS Alliance course offerings has grown from 14 to over 20. The Texas Family and Consumer Sciences Distance Education Alliance Task Force was interested in pursuing external funding for better management of Alliance functions. With the growth in the number of courses, as well as the need for organizational stability, in 2006 the Task Force decided that the time had come to measure the effectiveness of the consortium.

Thus, the purpose of this research study was to determine if students who enrolled in the online Alliance courses perceived that the courses effectively prepared them for teaching secondary FCS content. An additional purpose was to determine if the students perceived that the Alliance courses helped them to meet their goal of becoming certified in FCS in a timelier manner.

Sample and Methodology

To meet the purposes of the study, the researchers set parameters for the population that would be included in the study. To be included, the person must: (1) have completed at least one Alliance course, (2) be a university graduate, (3) be certified in FCS, and (4) have taught FCS at least one year in a secondary public school. The FCS Teacher Educators and/or Department Chairs at the institutions of higher education whose students had completed Alliance courses agreed to supply contact information. Permission was secured from the researchers' Institutional Review Boards to conduct the study. A postcard was mailed from the three researchers to all 96 persons for whom contact information was provided which briefly explained the research project and informed them that one of the researchers would call within the next few weeks to ask for their participation in a telephone interview.

The researchers developed the questionnaire used for the telephone interviews, field testing it with three university students who had taken Alliance courses but were not qualified to be included in the study. Also, the instrument was reviewed by two university FCS faculty. Their suggestions were implemented to make the instrument more understandable and clearer. The final version was a one-page, twenty-item document that included yes-no, multiple-choice, and short answer items that allowed the interview to be completed in approximately ten minutes. The telephone surveys were designed to gather demographic information, number of Alliance courses taken, helpfulness of Alliance courses in meeting the requirements for FCS certification within the expected timeframe, reasons for taking Alliance courses, degree of rigor of the Alliance courses completed, and degree of preparation for the FCS secondary classroom.

Attempts were made to contact all 96 persons for inclusion in the study. However, 19 of the telephone numbers provided were not valid and could not be updated, and 14 of those contacted did not meet all of the inclusion criteria, lowering the potentially eligible population to 63. At least two attempts were made to contact all 63 persons. A total of 32 persons from seven institutions were interviewed, resulting in a 50.8% response rate, considered more than adequate for generalizing to the total group of 63 "Alliance completers."

Results and Discussion

Of the respondents to the telephone survey, 84% were currently teaching in Texas, and 75% were teaching family and consumer sciences. The majority were aged 25 – 30, White non-Hispanic ethnicity, and female. Nearly 63% took their Alliance courses as undergraduate students, though 34% were classified under a post-baccalaureate/ deficiency plan. The average number of Alliance courses completed was three.

An overwhelming 72% of respondents stated that they could not have completed the FCS certificate without the option of the Alliance courses. Of that group, 84% stated that courses taken through the Alliance were not offered at the home institution, 47% reported that a particular course was not offered by the home institution during the semester it was needed, 34% reported academic scheduling conflicts, and 28% reported scheduling conflicts with required work schedules. (Note: Respondents were asked to indicate multiple reasons for taking Alliance

courses.) Regarding rigor and usefulness of Alliance courses, 91% of respondents reported that Alliance courses were at least as rigorous as those offered at the home institution and 91% also stated that Alliance courses prepared them for teaching the content area at the secondary level. Finally, 100% of respondents reported that they graduated and thus entered the work force sooner than they would have without the Alliance. Forty-one percent indicated that they graduated earlier by one semester, 31% by one year, and 28% by more than one year.

Conclusions and Implications

Based on the 72% who stated that they could not have completed the FCS certificate without the option of the Alliance courses and by extrapolating statistics gathered from the sample (32 respondents) to the entire population (63 "Alliance completers"), we can estimate that there are at least 45 family and consumer sciences teachers now working in Texas schools who would not have been able to complete certification without the FCS Alliance. With the projected loss of approximately 1000 teachers over the next five years due to retirement (Family and Consumer Sciences Distance Education Alliance, 2006), it is important to have strategies in place to prevent the elimination of programs across the state due to the lack of qualified, credentialed teachers. This study shows that inter-university agreements, such as the Texas Family and Consumer Sciences Distance Education Alliance, are an effective and efficient method for producing certified graduates to meet the established market demand. However, the profession still falls far short of meeting the need. Increasing awareness of the Alliance's usefulness to populations such as high school principals, counselors, and human resource personnel could result in more students taking course work needed to become certified in FCS.

References

- Bartley, S. J., & Sneed, T. D. (2004). A profile of family and consumer sciences teachers. *Journal of Family & Consumer Sciences*, 96(1), 83-88.
- Family and Consumer Sciences Distance Education Alliance. (2006). *Distance education project overview*. Retrieved from <http://www.fcsalliance.org/tedinfo.pdf>.
- McGinnis, G. N. (2004). Distance education alliance tackles FCS teacher shortage. *Journal of Family & Consumer Sciences*, 96 (3), 67-68.

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Lead Exposure among Young Children

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Children's safety is of utmost concern to parents. Lead poisoning is a significant environmental hazard that threatens the health and safety of children in the United States. Currently, an estimated 310,000 children under the age of six are affected (Coalition to End Childhood Lead Poisoning, 2008.). Lead enters the food supply from water, soil, and contaminated air. Additionally, young children are at increased risk for lead toxicity because of their behaviors – they play in soil, mouth nonfood items, and frequently have their fingers in their mouth.

Part of the danger associated with lead is that it has no smell and cannot be seen. This makes it difficult for consumers to make informed toy purchases. Laboratory tests for lead can accurately detect lead levels in toys and there are do-it-yourself kits available. However, home-based testing kits do not detect low levels or accurately measure variable lead level (Kumar & Pastore, 2007).

Fundamental Facts about Lead

- indestructible
- unalterable post-absorption
- subtle, permanent effects
- accumulates in skeleton, brain, and kidneys
- causes harm at low level exposure (<10 micrograms/100ml of blood)
- high levels can result in severe cognitive disabilities, coma, and even death

There are a number of sources through which children of all ages and socioeconomic levels are exposed to lead. Sharmer, Northrup-Snyder, and Juan (2007) noted that there were new pathways of lead exposure in many middle-income households including toys and antique furniture. According to Lanphear (2005) lead toxicity is primarily concentrated in two groups of children: 1) those that live in older, urban, rundown homes, and 2) those from affluent families that live in renovated older homes (built before 1978).

In addition, recent mainstream toy manufacturers have issued recalls on a wide variety of toys that were purchased by families across the socioeconomic spectrum. In 2007, in one round of recalls, Mattel pulled 750,000 units of 11 different toys (Total Recall for Mattel, 2007). These toys were manufactured in China but sold in the United States.

Following this incident Mattel committed to lead testing paint used in its products. Fisher-Price also recalled 1 million toys. The Consumer Product Safety Commission (CPSC) issued a recall of 150 million pieces of toy jewelry due to high lead content as well. Some of the toy jewelry contained as much as 69% lead by weight (Tragic Trinkets, 2004).

In regard to toy manufacturing there are two possible sources for lead contamination, the paint on the toys or the plastic in the toys. Lead was used to enhance the color of toys for the purpose of attracting children. Lead was banned in the United States in 1978 in paint, cookware and dishes, and products marketed to children. However, other countries still widely use lead based or lead containing products. While lead in paint has been banned, lead in *soft plastics* has not. Kumar and Pastore (2007) reported that toys made of polyvinyl chloride (PVC) are potentially toxic. They noted that these toys contained lead that can leach out. Lead is used in the production of plastic toys to soften, stabilize, and increase malleability (Center for Disease Control, 2008).

Prenatal and Postnatal Concerns

Lead can impact the healthy growth and development of children even before they are born. Exposure during pregnancy can have an adverse impact on a developing fetus (National Safety Commission, 2004c.). Lead exposure has been linked to miscarriage, premature birth, low birth weight, and developmental delays (Wittmer & Peterson, 2006). According to Shin, et. al (2007) lead exposure during pregnancy and lactation may contribute to neurobehavioral changes such as hyperactivity and cognitive deficits in the child.

During stages of rapid growth, the gastrointestinal tract absorbs more lead than it should and it retains it thereafter in vital tissues. Children under six absorb or retain about 50% of the lead that they ingest (National Safety Commission, 2004b). Lead is a heavy mineral that competes with iron for its place in red blood cells, but lead is unable to carry oxygen effectively through the blood once it becomes incorporated into the red blood cells. Thus, anemia develops.

If a child has been exposed to lead they may exhibit symptoms that resemble the flu. A child may complain of stomachache, headache, show increased irritability, and loss of appetite. The only way to know with certainty if a child has lead-related problems is for the child to be tested. (National Safety Commission, 2004a.)

Phelps (2007) reported that impairments in language ability were a potential effect of lead toxicity. Magnetic resonance imaging (MRI) exams showed that children exposed to lead had abnormal brain activity. Higher blood lead levels were linked to diminished activity in the left hemisphere of the brain which was associated with language ability. Lead exposure has also delayed puberty in girls (Selevan, et.al, 2003). Lurie, Brooks, and Gray (2006) reported children exposed to lead were at higher risk for dyslexia and deficits in auditory temporal processing. Other problems included learning disabilities, hyperactivity, attention deficit disorder, hearing loss, slowed or reduced growth, behavioral problems, and violent or aggressive behavior (Coalition to End Childhood Lead Poisoning, 2008).

Solutions

Minimizing the amount of lead ingested is one of the best ways to prevent significant damage. Children should be tested for lead exposure, especially if they are in one of the high risk groups for exposure. Homes built before 1978 should also be tested for lead based paint. To minimize the risks of ingestion of lead through typical childhood activities, children's hands and faces should be washed often. Toys and pacifiers should also be washed as a way to reduce the risk of a child ingesting lead-contaminated dust. Diet and nutrition can also combat the effects of lead absorption (National Safety Commission, 2004b.). At least four nutritional states increase the adverse effects of lead exposure and should be avoided. These include: 1) iron deficiency, 2) decreased calcium intake, 3) irregular meal patterns, and 4) a high-fat diet.

According to the Center for Disease Control (2008), toys that have been manufactured in other countries and antique toys pose particular lead exposure risk to children. It is recommended that parents regularly check the CPSC website for toy recalls.

References

Center for Disease Control (2008). *Toys and childhood lead exposure*. Retrieved on January 29, 2008 from <http://www.cdc.gov/lead>.

Coalition to End Childhood Lead Poisoning (2008). *About lead poisoning*. Retrieved on January 29, 2008 from <http://www.lead-safe.org/content>.

Kumar, A., & Pastore, P. (2007). Lead and cadmium in soft plastic toys. *Current Science*, 93(6), 818

Lanphear, B.P. (2005). Childhood lead poisoning prevention: Too little, too late. *Journal of the American Medical Association*, (293)18, 2274.

Lurie, D., Brooks, D., & Gray, L. (2006). The effects of lead on the avian auditory brainstem. *NeuroToxicology* 27(1), 108-117.

National Safety Council. (2004a.) *Identifying children with elevated blood-lead levels*. Retrieved on January 30, 2008 from www.nsc.org/issues/lead/bloodlead/htm.

National Safety Council. (2004b). *Lead poisoning and nutrition*. Retrieved on January 30, 2008 from www.nsc.org/issues/lead/lead_nutrition.htm.

National Safety Council. (2004c). *Health effects on children*. Retrieved on January 30, 2008 from www.nsc.org/issues/lead/healtheffects.htm.

Phelps, J. (2007). Lead exposure may affect language ability. *Environmental Health Perspectives*, 115(2), 83.

Selevan, S., Rice, D., Hogan, K., Euling, S., Pfahles-Hatchens, A., & Bethel, J. (2003). Blood lead concentration and delayed puberty in girls. *New England Journal of Medicine*, 348(16), 1527-1536.

Sharmer, L., Northrup-Snyder, K., & Juan, W. (2007). Newly recognized pathways of exposure to lead in the middle-income home. *Journal of Environment Health*, 70(3), 15-19.

Shin, C.Y., Choi, J.W., Choi, M.S., Ryu, J.R., Ko, K.H., & Cheong, J.H. (2007). Developmental changes of the activity of monoamine oxidase in pre- and postnatally lead exposed rats. *Journal of Environmental Health*, 70(3), 58-59.

Tragic trinkets. (2004). *Environmental Health Perspectives*, 112(14), 803-809.

Total recall for Mattel. (2007). *Chemical Engineer*, 746, 12.

Wittmer, D.S. & Petersen, S.H. (2006). *Infant and toddler development and responsive program planning: A relationship-based approach*. Upper Saddle River, New Jersey: Pearson

Hedonic Consumption as a Predictor of Credit Card Usage among College Students

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Introduction

Many consumers are living on or over the financial edge. Often, they are spending everything they make, or more than they make, not even realizing their expenditures consistently exceed their income. For some, the money involved in credit card transactions is abstract and unreal; for others, obtaining more credit is the equivalent to obtaining additional income. This credit attitude can exacerbate credit card debt and personal bankruptcy (Warwick & Mansfield, 2000).

One consumer group that is targeted aggressively for credit cards is college students. With their higher than average expected lifetime earnings, they are viewed as a lucrative market for credit card companies. In the United States, many college students grew up in families who used credit freely and held credit card debt. Thus, students may see credit cards as a means of increasing their purchasing power while on a limited income (Schembari, 2000). Credit cards can promote spending by making the transaction simpler or by removing the immediate need for money. For college students, credit cards can enable them to participate in activities with their peers and help them feel they belong even though they do not have the money to pay for the goods and services that they consume (Hayhoe, 2002). Because credit cards can eliminate the immediate need for money to buy something, they are likely to accelerate the development of impulse buying and overspending (Ritzer, 1995; Robert & Jones, 2001).

Buying is often associated with the fun or thrill of the shopping experience. This associated shopping pleasure is linked to hedonic consumption which includes behavioral aspects related to consumers' multisensory, fantasy, and emotional experiences with products (Hirschman & Holbrook, 1982). Moreover, hedonic consumption can trigger impulse buying which in turn satisfies consumers' need for fun, pleasure, or emotional gratification. This satisfaction is made easier through the use of a credit card (Hausman, 2000; Park et al., 2005). Therefore, consumer behavior associated with college students' credit card use is of great interest in the area of

family and consumer sciences. Furthermore, understanding the relationship between credit card use and hedonic consumption is useful in developing educational programs that help students understand how to use credit widely.

Purpose

The purposes of this study were to (a) identify the dimensions of credit card usage of college students, and (b) examine the effect of hedonic consumption on credit card usage among college students.

Method

Sample and Procedures

Data were obtained from college students (N=145) who self-identified as credit card users. They were enrolled in fashion-related programs in a university located in a metropolitan area in a southwestern state. A self-administered questionnaire developed from a literature review was used to gather data during scheduled class periods. The sample was primarily female (81.4%), ages 21 to 24 (58.4%), and Caucasian (100%). Subject selection and data administration were approved by an institutional review board on the use of human subjects in research.

Measures

Participants responded to "When I use my credit card(s)..." for 9 items of credit card usage (Roberts & Jones, 2001) and four items of hedonic consumption (Hausman, 2000) using a 7-point rating scale (1 = strongly disagree, 7 = strongly agree). Mean scores ranged from 4.22 to 1.67 for credit card usage and 4.66 to 4.20 for hedonic consumption. For credit card usage, the highest mean score was for spending (e.g. "When I use my credit card(s), I spend more") and the lowest mean score was for available credit (e.g. "I rarely go over my available credit card limits").

Factor analysis with varimax rotation identified underlying dimensions of credit card use by college students. Path analysis examined the causal relationships between hedonic consumption and credit card usage.

Findings

Factor analysis revealed three factors: *Spending*, *Debt*, and *Credit* with eigen values above 1.0 and explained 64.8% of the total variance. Factor loadings ranged from .65 to .91 while reliabilities ranged from .69 to .91. Hedonic consumption was unidimensional and explained 78.1% of the total variance with a reliability of .90. See Table 1.

Table 1. Factor Analyses and Means for Credit Card Usage and Hedonic Consumption of College Students

Items	Factor Loading	Means ^a (S.D)	Cronbach's alpha
<u>Credit Card Usage</u>			
<i>Spending</i>			
I am more impulsive in shopping.	.91	4.04 (2.17)	.91
I spend more.	.89	4.22 (2.15)	
I am less concerned with price of a product when I use a credit card.	.87	3.86 (2.23)	
<i>Debt</i>			
I worry how I will pay off my credit card debt.	.81	3.26 (2.18)	.80
I use it to the maximum credit limit.	.72	2.82 (2.06)	
I often make only the minimum payment on my credit bills.	.70	3.08 (2.11)	
<i>Credit</i>			
I am seldom delinquent in making payment.	.79	1.88 (1.08)	.69
I rarely go over my available credit card limits.	.71	1.67 (0.95)	
I always pay it off at the end each month.	.65	1.91 (1.12)	
<u>Hedonic Consumption</u>			
I want to satisfy my sense of curiosity.	.94	4.66 (1.59)	.90
I want to offer new experiences.	.91	4.66 (1.56)	
I want to feel like I'm exploring new worlds.	.87	4.20 (1.68)	
I want to like to shop for the novelty of it.	.81	4.55 (1.71)	

^a Responses to the statement "When I use my credit card(s), ..." using a 7-point Likert-type scale (range: 1=strongly disagree to 7= strongly agree).

For path analysis, hedonic consumption served as an independent variable while the three credit card usage factors served as the dependent variables. As a result of path analysis, the overall model fit was good to accept (Chi-square = 1.06, $df = 2$, $p = .59$; GFI = 1.00; AGFI = .99; CFI = 1.00; RMR = .01). Hedonic consumption significantly influenced usage for *Spending* ($\gamma_{11} = .65$, $t = 4.02$, $p < .001$), *Debt* ($\gamma_{21} = .71$, $t = 3.98$, $p < .001$), and *Credit* ($\gamma_{31} = -.45$, $t = -3.58$, $p < .001$). See Table 2.

Table 2. Standardized Path Estimates of Hedonic Consumption and Credit Card Usage of College Students

Causal Paths	Estimates	t-value	$p <$
Hedonic consumption → Spending	.65	4.02	.001
Hedonic consumption → Debt	.71	3.98	.001
Hedonic consumption → Credit	-.45	-3.58	.001

Conclusions and Implications

Hedonic consumption can be an important and significant determinant in predicting college students' credit card use. From a *hedonic* perspective, college

students who seek novelty, curiosity, and sensation (i.e., hedonic consumption) are more likely to use credit cards, and to have problems with spending, debt, and credit limits. This implies that college students who seek hedonic consumption are more likely to use credit cards for impulsive shopping and spending. Moreover, these students are worrying about paying off their credit debts, are more likely delinquent in making payments, and may go over available credit limits.

This study provides family and consumer science educators with insights about the impact of hedonic consumption on college students' credit card use. College students think about credit cards in relation to how they spend, their concern about debt, and how they will pay for that debt, all potential stressors in students' lives. The competitive nature of the university environment also creates stressors which college students may

compensate for through hedonic experiences made possible by credit card purchases; this is an area for further research. While in college, students go through a major transition period where previous behaviors are changed and new behaviors are initiated. This life stage offers family and consumer science educators the opportunity to work with students in programs that teach and guide social ethics related to credit card use since credit card use stimulates spending and may lead to greater imprudence.

Family and consumer science educators also need to work with credit card companies to develop educational materials aimed at informing college students about

the proper credit card use. This might be accomplished through debt management and debt reduction information included in monthly bills. The value of such a program to credit card companies is the development of a stronger credit-worthy customer

base that will have incrementally greater spending power upon graduation and professional employment.

University administrators have fiscal and educational responsibilities for what the student is exposed to on campus. Some campuses are prohibiting credit card solicitation by the banks located on their campuses. While this ban may reduce some credit card solicitation, students can acquire credit card applications from many sources. Furthermore, this does not address the need for students to understand the basic principles of using credit. Family and consumer science educators need to take an active role in campus-based debt management centers and working with universities to address student credit card use.

References

Hausman, A. (2000). A multi-method investigation of consumer motivations in impulse buying behavior, *Journal of Consumer Marketing*, 17(15), 403-19.

Hayhoe, C. R. (2002). Comparison of affective credit attitude scores and credit use of college students at two points in time. *Journal of Family and Consumer Sciences*, 94(1), 71-77.

Hirschman, E. C., & Holbrook, M. B. (1982). The experiential aspects of consumption: Consumer fantasies, feelings, and fun. *Journal of Consumer Research*, 9(2), 132-40.

Park, E. J., Kim, E. Y., & Forney, J. C. (2005). A structural model of fashion-oriented impulse buying behavior. *Journal of Fashion Marketing and Management*, 10(4), 433-446.

Ritzer, G. (1995). *Expressing America: A critique of the global credit card society*. Thousand Oaks, CA: Pine Forge Press.

Roberts, J.A., & Jones, E. (2001). Money attitudes, credit card use, and compulsive buying among American college students. *The Journal of Consumer Affairs*, 35(2), 213-240.

Schembari, J. (2000, February 27). New college sticker shock: Junior's credit card bill. *New York Times*, p. 12.

Warwick, J., & Mansfield, P. (2000). Credit card consumers: College students' knowledge and attitude. *The Journal of Consumer Marketing*, 17(7), 617-626.

Significance of the Texas FCS Distance Education Alliance to Texas Certification Students (continued from page 11)

Mimbs, C. A. (2002). Practicing teachers' advice for marketing and recruitment of educators and revisiting the name issue. *Journal of Family & Consumer Sciences Education*. Retrieved from <http://www.natefacs.org/JFCSE/v18no1/v18no1Mimbs.pdf>

Tripp, P. J. (2006). A profile of California's secondary family and consumer sciences teachers. *Journal of Family & Consumer Sciences*, 98(1), 60-64.

Werhan, C., & Way, W. L. (2006). Family and consumer sciences programs in secondary schools: Results of a national survey. *Journal of Family & Consumer Sciences*, 98(1), 19-25.

White, J. H., Tripp, P. J., & Burleson, L. (2007). Strategies for strengthening enrollment in higher education for family and consumer sciences. *TAFCS Research Journal*, 2(2), 10-12.

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References

Berry, (September, 1997). Branding the Store, *Retailing Issues Letter*, 9 (5), pp. 1-4.

Branded stores continue to expand. (2005, December 5). *Furniture/Today*, 30 (13), pp. 20-24.

Brandon, L. & Kinley, T. (2007). Young Consumers Perceptions of Lifestyle Home Furnishings: Brands and Quality *TAFCS Research Journal*, 2 (2), pp. 17-18.

Brandon, L. & Kinley, T. (2006). Lifestyle home furnishings: Is the branding strategy working? *TAFCS Research Journal*, 2 (1), pp. 18-19.

French, D. (2007, May 28). Channel surfing: single-source networks. *Furniture/Today*, 31 (37), p. 64.

Linville, J. (2004). Licensing works; if it's done right. *Furniture/Today*, 28 (38), pp. 12-13.

Weber, N. (2006, September 11). The name doesn't say it all for home shoppers, *Home Furnishings News*.

Consumer Awareness, Perceptions and Purchasing of Home Furnishings Brands

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Introduction

This study broadens on-going research regarding consumers' knowledge and perceptions of brands in the home furnishings industry (Brandon & Kinley, 2007; Brandon & Kinley, 2006). The industry has lagged behind other sectors in brand-building, but has employed a variety of methods in recent years. Two primary branding strategies have included 1) licensing programs and 2) single source networks. Licensing programs include products or brands that are associated with celebrities or designers. Trade publications have long reported this strategy in industry circles. In 2004 alone, over 100 licensing programs were identified in trade print (Linville, 2004). These license-branding programs include entities ranging from celebrities such as Kathy Ireland and Cindy Crawford to historic foundations such as the Biltmore and the Historic Charleston Foundation to the unique including NASCAR and Elvis Presley. Several of the programs have been discontinued, but others have replaced them (Linville, 2004).

The second strategy, although not new, has been rebranded as a *single source network*. This strategy has become more visible to the consumer through marketing, merchandising, and the increase in numbers of retail units in this category. Single sources are companies, privately or manufacturer-owned, whose single-largest category or majority of product is from one manufacturer (French, 2007). This allows one company to present complete brand extension from the product through the retailer to the consumer without diluting the brand with multiple company names or no manufacturer's information readily identifiable (Branded stores, 2005). In 2007, the top ten companies in this category included Ashley, Ethan Allen, La-Z-Boy, Thomasville, Bassett, Drexel Heritage, and Norwalk (French, 2007). Although there are a relatively few number of players in this category, it has been increasing in market share and in 2006 accounted for 7% (\$5.9 billion) of the \$83.8 billion in retail sales of furniture and bedding (French, 2007).

The brand building strategies of licensed programs and single source networks have been reported in industry and trade publications for years. However,

have the brand building strategies made their way into the consumers' minds and have they affected the perceptions regarding home furnishings brands and consumer preferences to purchase these brands? Consumers have indicated that quality, price, and value, not brand, top their list when making purchasing decisions for furnishings (Weber, 2006). Four key components have been identified that lead to consumers incorporation of a brand into their lives (Berry, 1997):

1. Brand awareness – consumer ability to recognize/recall a brand when given a clue.
2. Brand meaning – consumer's impression of the brand and associations with it.
3. Brand knowledge – all information about the brand the consumer holds in mind.
4. Brand equity – positive or negative influences based on consumer experiences with the brand.

Purpose

The purpose of this study was to determine brands of furniture consumers prefer to purchase, their perceptions regarding celebrity or designer-named home furnishings products and whether age, income, or gender affected those choices and perceptions. The following research questions were used to guide the study:

1. With which brands do consumers most identify?
2. Are consumers aware of licensed furniture brands, those with a celebrity or designer-name or cross-over brands (i.e., fashion/apparel), those not originally associated with furniture?
3. Do the demographic factors, age, income, or gender affect awareness of licensed brands?

Method

Consumers in a national data base participated in an Internet survey regarding home furnishings brands and designer-named furniture products. To determine which brands the subjects identified with most, the first question on the survey asked them to name three furniture brands they purchase most often. This question was placed first

so that subjects could answer without being influenced by brand names listed later in the questionnaire. To determine awareness of licensed brands, subjects were given a list of twenty licensed brands, seventeen of which were celebrity-endorsed brands, and asked to identify whether they were familiar with the brand. The twenty licensed brands were compiled through web searches of companies publicizing their licensed brands and advertisements of licensed brands in shelter magazines.

Findings

A total of 987 surveys were completed. One survey from a 14-year-old subject was removed from the data, reducing the number of surveys to 986. The sample was almost evenly split between males (46.5%) and females (53.5%) with an age range of 20 to 64, and an average age of 41. Almost half (45.3%) of the subjects indicated a yearly income between \$40,001 and \$80,000, 86% of the sample was Caucasian, and 78.3% were married.

Brands With Which Consumers Most Identify

When asked which top three brands they purchase most, a variety of answers appeared. It is telling that 499 answers indicated in essence “brands don’t matter”. A total of 1832 answers were included, of which 241 different brands were listed, including actual furniture brands and also names of furniture retailers. Additionally, 70 answers were listed that were not brands nor retail stores (i.e. “don’t know,” “don’t shop by brand”). The ten most frequently listed brands that were purchased most often were, in order of frequency: La-Z-Boy, Broyhill, Ashley, Ethan Allen, Lane, Ikea, Thomasville, Sauder, Bassett, and Rooms to Go.

Awareness

More than 50% of the respondents were unaware of ten of the twenty *celebrity* licensed home furnishings products. The brands for which the greatest number of subjects indicated recognition were Laura Ashley (81.5%), Rachel Ashwell-Shabby Chic (75.2%), Kathy Ireland (69.7%), Christopher Lowell (69.2%), and Humphrey Bogart (68.3%).

Demographic Influences

Analysis of variance indicated older subjects had significantly ($p < .05$) greater awareness of the following brands: Martha Stewart, Ralph Lauren, Todd Oldham, and Alexa Hampton. Chi square analysis indicated income had a significant effect ($p < .05$) on the awareness of nine of the brands studied. Subjects who indicated an income of \$160,000 - \$180,000 were aware of Rachel Ashwell, Ralph Lauren, and Todd Oldham more often than the other income groups. Subjects who indicated an

income of \$140,000 to \$160,000 indicated a greater awareness of Jessica McClintock and Christopher Lowell, and subjects earning \$120,000 - \$140,000 indicated a greater awareness of Kathy Ireland, Jaclyn Smith, and Alexander Julian.

Chi square analysis indicated significant differences in awareness of celebrity and licensed brands between males and females for twelve of the brands. More males indicated significantly more awareness of the following brands: Kathy Ireland, Ernest Hemingway, Todd Oldham, Barbara Barry, Alexander Julian, Nautica, Biltmore Estates, Cindy Crawford, Antiques Roadshow, and Alexa Hampton. More females indicated significantly more awareness of the brands Laura Ashley and Ralph Lauren ($p < .05$).

Conclusions

This study indicates that although furniture companies are increasing their visibility to the general public, their brand recognition as a whole is still low among consumers. Only ten of a listing of twenty licensed brands or designer-named products well-known by the industry was recognized by consumers. Open-ended questions regarding brands gave consumer respondents an opportunity to list the brands they have purchased or would purchase. Most of those listed are categorized as single source networks (i.e. Lazy Boy, Broyhill, Ashley, Ethan Allen, Thomasville, and Bassett) indicating that this strategy by the industry is gaining recognition by consumers. However, by the wide variety of answers gleaned from the questions, many consumers are unable to identify a brand versus a single retailer or single manufacturer.

Implications

Furniture companies desiring to build brands with consumers should continue to promote continuity throughout their organization from product to retailer to consumer. A growth in the single source category seems to be having the largest impact on consumer awareness of at least the name associations with these companies.

Family and Consumer Science professionals involved in educating students or the public in general regarding home furnishings purchases can discuss the components of a brand. They can focus on how purchasers of furnishings can identify known companies and increase consumer knowledge regarding licensed furniture products.

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Understanding the Student with Attention Deficit Hyperactivity Disorder: A Review of Literature

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The face of Attention Deficit Hyperactivity Disorder (ADHD) punctuates the classroom at all levels of education from elementary to university students (Evans, Serpell, Schultz, & Pastor, 2007). Understanding the disorder and its ramifications can assist individuals, families, and communities in providing nurturing environments for ADHD sufferers...environments where study is effective and learning is enhanced.

Problem

Many persons are diagnosed with ADHD as children. As children become teenagers and young adults, they may realize the fallacy of “out-growing” the disorder. Research reveals that approximately 80 percent of children continue ADHD symptoms into adulthood (The Harvard Letter, 2004). For those successful enough to enter college, inattentive symptoms such as poor time management, disorganization, lack of focus, and uncompleted tasks characterize the higher education experience. Social, academic, and discipline problems may become more severe (Evans et al. 2007). Ultimately, the disorder even complicates adult job opportunities and social relationships (Attention Deficit Disorder Association, 2004; Lopez, 2007; Matlen, 2005; Strock, 2003). Surprisingly, female ADHD students are often overlooked or misdiagnosed by as much as 50 to 75 percent (Adams, 2007; Nadeu, Littman, & Quinn, 1999). Educators and professionals may not recognize the disorder since females exhibit different symptoms than males (Quinn & Nadeau, 2002; Brown, 2007). Quinn and Nadeau (2002) assert that girls are taught “to please” and therefore, they are much less likely to display impulsive symptoms. Another words, girls have learned to compensate, and consequently, teachers and parents may view their inattentive behavior as immaturity, not ADHD.

Treatment

Drug therapy is the primary treatment for ADHD with stimulant and non-stimulant drugs helping to control undesired behaviors (Lopez, 2007). However, troubling side effects may result such as insomnia, agitation, decreased appetite, irritability, anxiety,

nausea, headache, and heart conditions (Strock, 2003). Even though medication is a viable option (Greenspan, 2002), many students choose to discontinue medication due to these undesirable side effects. Consequently, usage drops sharply throughout adolescence (Pelham, Molina, Meichenbaum, Gnagy, & Greenhouse, 2003).

Medication alone will not fully alleviate ADHD symptoms; a multimodal treatment is most effective. The combination of medication, behavior therapy or coaching, and accommodations or special education services provides the best solution (Brown, 2007; CHADD, 2008; Ratey, 2004; Attention Deficit Disorder Association, 2004; Strock, 2003). For the ADHD adult, coaching...especially for the newly diagnosed...may be all that is required to promote normal daily functioning (Matlen, 2005).

Environment and Design

The environment figures significantly in the success of individuals with ADHD. Their sensitivity to environmental stimuli such as sight, sound, smell, and surrounding activities can prove debilitating (Greenspan, 2002). According to Nadeau (1995):

“...individuals with attention deficit disorder are both drawn to and overwhelmed by a highly stimulated environment. If the individual is “understimulated,” he or she may become sleepy, tired, lethargic, or mildly depressed. If the individual feels “overstimulated,” he or she may become overwhelmed and will “shut down.”

The effect of stimuli may even become exaggerated; clothing tags touching the body or bright lights in the environment may cause severe distraction. Depending on color intensity, a color can either stifle or energize, but either way, concentration becomes impossible (Cook, 2006).

Recent research suggests that many individuals with ADHD “... also suffer from sensory processing disorder, a neurological underpinning that contributes to their inability to pay attention or focus” (Koenig & Kinnealey, 2005). Light, touch, movement, or sound may cause an ADHD individual to either seek or withdraw from the stimulus. Either response

negatively impacts a person's ability to maintain focus.

Lighting

A prominent feature of one's physical environment is lighting. Frank H. Mahnke stated in his book *Color, Environment, and Human Response* (1996) that light and color are more important in our lives than just as illumination or elements in a pleasant environment. Poor lighting design creates psychological and physiological risks such as nervousness, lack of concentration, inefficiency, bad mood, anxiety, visual disturbance, headache, and stress.

Natural Light

The use of natural light in environments has slowly ebbed through the evolution of mankind (Abercrombie, 1990). Early ancestors lived primarily in natural sunlight and easily received its healthful benefits. Humans today live predominantly in sheltered interiors dependent on artificial light (Noell-Waggoner, 2002a, 2002b), light produced commonly through incandescence or electrical discharge. Exposure to sunlight...with the light penetrating the skin and entering the eyes...must now be purposeful.

Attention Restoration Theory

Two new lighting trends have emerged that aid all students, especially those with ADHD. The integration of natural light within schools through windows, skylights, and light tubes has netted improved test scores and an overall sense of well-being in school inhabitants. While window views should be monitored for the ADHD student to avoid distraction, research indicates that views of natural settings are helpful in restoring concentration for the ADHD individual (Heschong Mahone, 1999, 2001; Oldroyd, 2005; Taylor, Kuo, & Sullivan, 2001).

Artificial Light

In contrast to natural lighting, artificial fluorescent lighting has become the dominant light source in public environments (Kuller & Laike, 1998; Kopec, 2006). Research studies have reported that fluorescent light increases hyperactivity, headaches, visual discomfort, and cognitive dysfunction and jeopardizes central nervous system functions (Kuller & Laike, 1998; Ott, 1985).

Some researchers have investigated the impact of campus lighting environment on college-age students. One of the latest studies conducted by Knez and Hygge (2002) revealed a cognitive impairment attributed to fluorescent light flicker and auditory distractions (the humming of the ballast) on ninety-six 18-year-olds. Their findings concluded "...that warm-white compared to cool-white lighting enhanced the subjects' long-term memory recall."

This conclusion is, to some extent, in line with recent observations that cool-white lighting may be more disruptive than warm-white lighting in problem-solving and recall (Knez & Hygge, 2002).

Recent research investigating the impact of light source and direction on the ADHD student yielded two conclusions (Perritt, Calhoun, McCune, & McCune, 2007). Students completed reading comprehension exercises under eight lighting conditions. Data analysis of respondent test scores, completion times, and number of observed off-task behaviors suggested that students performed better cognitively with halogen task lighting or ambient lighting of either compact fluorescent or parabolic fluorescent sources.

Conclusion

The physical environment challenges the attention span and frequently impairs the educational performance of students with ADHD. An awareness of these challenges can inform the efforts of families, educators, designers, and administrators in maximizing the learning of the ADHD student. A multi-faceted treatment strategy combining drug therapy, environmental factors, and behavior modification can provide the most meaningful approach for promoting "optimal quality of life" in ADHD sufferer (AAFCS, 2007).

References

- Abercrombie, S. (1990). *A philosophy of interior design*. New York: Harper & Row, Publishers.
- Adams, C. (2007, March 1). Girls *The Free Library*. (2007). Retrieved May 16, 2008 from <http://www.thefreelibrary.com/Girls> & ADHD: are you missing the signs?-a0161271152
- American Association of Family and Consumer Sciences. (2007). *Mission*. Retrieved February 10, 2008, from American Association of Family and Consumer Sciences Web site: <http://www.aafcs.org>
- Attention Deficit Disorder Association (2004). *What causes AD/HD?* Retrieved June 11, 2006, from Attention Deficit Disorder Association Website: <http://www.add.org/articles/WhatCausesAD-HD>
- Brown, T. (2007). A New Approach to Attention Deficit Disorder. *Educational Leadership*, 64(5).
- Children and Adults with Attention Deficit Hyperactivity Disorder (CHADD), (2008). *What is AD/HD or ADD?* Retrieved February 14, 2008, from <http://www.help4adhd.org/en/treatment/treatmentoverview>

Cook, T. (2006). *Living with ADHD and SPD: An adult's perspective*. Retrieved June 14, 2006, from <http://www.TheSPDNetworkLivingwithADHDandSPDAnAdult'sPerspective.htm>

Evans, S., Serpell, Z., Schultz, B., & Pastor, D. (2007). Cumulative benefits of secondary school-based treatment of students with Attention Deficit Hyperactivity Disorder. *School Psychology Review*, 36(2), 256-273.

Greenspan, S. (2002). *Working with a child who may have ADD*. *Scholastic Early Childhood Today* 16(6), 23-25.

Heschong Mahone Group, (1999). Daylighting in Schools: An investigation into the relationship between daylight and human performance. Detailed Report. Fair Oaks, CA.

Heschong Mahone Group, (2001) Re-Analysis Report, Daylighting in schools, for the California Energy Commission, published by New Buildings Institute, www.newbuildings.org

Koenig, K. & Kinnealey M. (2005, May 13). *Study finds ADHD improves with sensory intervention*. Paper presented at the American Occupational Therapy Association meeting. Retrieved June 14, 2006, from <http://www.ADHDandSensory.htm> *American Medical Association*, 271(2), 128.

Knez, I. & Hygge, S. (2002). Irrelevant speech and indoor lighting: Effects on cognitive performance and self-reported affect. *Applied Cognitive Psychology*, 16, 709-718.

Kopec, D. (2006). *Environmental psychology for design*. New York: Fairchild Publications, Inc.

Kuller, R., & Laike, T. (1998). The impact of flicker from fluorescent lighting on well-being, performance and physiological arousal. *Ergonomics* 41(4), 433-447.

Lopez, F. (2007). Children's health: Managing ADHD during the school year. Retrieved February 8, 2008, from EP MAGAZINE/ www.eparent.com

Mahnke, F. H. (1996). *Color, environment, and human response*. New York: John Wiley & Sons, Inc.

Matlen, T. (2005). *ADHD: Not just for kids anymore*. Attention Deficit Disorder Association, Retrieved June 10, 2006, from http://www.add.org/articles/not_just_for_kids.html

Nadeau, K. G. (1995). *A comprehensive guide to attention deficit disorder in adults*. New York: Brunner/Mazel.

Nadeau, K., Littman, E., Quinn, P. (1999) *Understanding girls with ADHD*. Silver Springs: Advantage Books.

Noell-Waggoner, E. (2002a, November 3-5). Let there be light, or face the consequences: A national concern for our aging population. The Fifth International LRO Lighting Research Symposium—Lighting and Human Health.

Noell-Waggoner, E. (2002b). Light: An essential intervention for Alzheimer's disease. *Alzheimer's Care Quarterly* (3)4, 343-352.

Oldroyd, S. (2005). Daylighting in schools, grades k-12. *Architectural Record*: McGraw Hill.

Ott, J.N. (1985). Color and light: Their effects on plants, animals and people. *The International Journal of Biosocial Research* (7), 1-35.

Pelham, W., Molina, B., Meichenbaum, D., Gnagy, E., & Greenhouse, J. (2003). *Stimulant effects on long-term outcomes in ADHD individuals*. Paper presented at New Clinical Drug Evaluation Unit meeting, Boca Raton, FL.

Perritt, M., Calhoun, R., McCune, E.D., & McCune, S. (2007). Effect of light source and direction on the cognitive performance of college students with attention deficit hyperactivity disorder (peer reviewed). *International Conference Abstracts of the Interior Design Educators Council*.

Quinn, P., Nadeau, K. (2002). *Gender issues and ADHD: Research, diagnosis and treatment*. Silver Springs: Advantage Books.

Ratey, J. (2004). *An update on medications used in the treatment of attention deficit disorder*. Retrieved June 10, 2006, from Attention Deficit Disorder Association Web site: <http://www.add.org/articles/updatemed.html>

Strock, M. (2003). *Attention deficit hyperactivity disorder*. Retrieved September 8, 2005, from the National Institute of Mental Health Web site: <http://www.nimh.nih.gov/publicat/adhd.cfm>

Taylor, A., Kuo, F., & Sullivan, W., (2001). Coping with ADD: The surprising connection to green play settings. *Environment and Behavior*, 33, 54-77.

The Harvard Letter, (2004). A lifetime of distractions: ADHD is no longer a children's disease. *Harvard Health Publications*, (29)12.

Vigorous Physical Activity Patterns among College Students

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Rationale and Purpose

Obesity is a public health crisis (Salinsky & Scott, 2003). The percentage of overweight and obese children, adolescents, and adults in the U.S. has been growing at an alarming annual rate of 0.3 to 0.9 percentage points across all groups during the past three decades, with no indication of a decline in future incidence (Wang & Beydoun, 2007). Currently, 17% of children and adolescents are overweight and 34% are at-risk for overweight, and approximately 127 million (66%) adults age 20 years or older are overweight or obese (American Obesity Association [AOA], 2007). Epidemiological research indicates that if the rate of overweight and obesity continues at this pace, by 2015, 75% of adults and nearly 24% of U.S. children and adolescents will be overweight or obese (Wang & Beydoun, 2007). Obesity is currently the second leading preventable cause of disease and death in the U.S., and is likely to become the leading cause if no effective approach to controlling future incidence is implemented.

A sedentary lifestyle is cited as one of the leading causes of overweight and obesity (USDHHS, 2000). Additionally, people who engage in vigorous physical activity on a regular basis see more overall health and weight-related benefits compared to non-exercising or light-exercising individuals (Lee & Paffenbarger, 2000). The recommended amount of vigorous-intensity activities (examples: jogging, running, aerobics, heavy yard work) includes greater or equal to 20 minutes/day, greater than or equal to three days per week, or both (Centers for Disease Control and Prevention [CDC], 2005). According to population statistics, prevalence of meeting recommended levels of physical activity decreases significantly between adolescence and young adulthood (CDC, 2005). National surveillance data show that 64% of high school students participate in sufficient vigorous physical activity compared to 39% of college students, and only 25% of adults engage in a high level of physical activity on a regular basis (CDC, 2005). More recent research suggests that a decline in physical activity in the first few months of college which is continued throughout remaining college years, may lead to patterns of

inactivity that persist after graduation and as an adult. Bray and Born (2004) found that 66% of college students reported adequate levels of VPA in high school, whereas only 44% met similar recommendations during their first two months and remaining years at the university. Similar patterns of declining exercise have also been reported in other studies investigating VPA among students transitioning from high school to college and throughout their college years (Buckworth & Nigg, 2004; Lowry et al., 2000). Although students most often cite the added stress of college life and lack of time as the principal barriers to exercise, researchers report that students' self-efficacy for coping with barriers to exercise may be an important predictor in the adoption and maintenance of long-term exercise behaviors (Bray & Born, 2004; Guyresik, Bray & Brittain, 2004).

The purpose of this research was to examine university student's recall of vigorous physical activity patterns during high school compared to college years, and related factors influencing students' participation in the recommended amount of vigorous activity.

Procedures

Research methods used in this study were approved by the Nutritional Sciences Institutional Review Board for Human Research at Texas Christian University. A sample population of male and female undergraduate university students (N=102; 19.6±1.5 years/old; 52% Lower-Grade Levels [Freshman/Sophomore] and 48% Upper-Grade Levels [Junior/Senior]) was recruited from multidisciplinary academic backgrounds for study participation. Student participation was voluntary and informed consent was obtained prior to the study. Students provided demographic data and completed a Fitness Questionnaire (FQ). The FQ was developed by researchers and reviewed by a team of exercise fitness and nutrition professionals for appropriate content and readability. The FQ (12 questions) examined students' recall of vigorous physical activity patterns during high school compared to college years, and factors that impact their current

participation in physical activity. Student responses specified VPA lasting ≥ 20 minutes/day and included activities requiring moderate to strenuous effort sustained long enough to cause one to break a sweat

or to breathe heavily (examples: jogging, running, fast bicycling, aerobics, basketball). Demographic information and FQ results were analyzed using SPSS-XIV (SPSS, 2005). ANOVAs ($P \leq 0.05$), frequency distribution, descriptive statistics, and correlations were calculated to meet study objectives.

Results

Results from the Fitness Questionnaire showed that the amount of recommended VPA among students declined significantly from high school to college years ($P=0.01$). Compared to VPA patterns in students' last year of high school (14% at <3 times/week, 16% at 3-4 times/week, 70% at >5 times/week), a decline in the total number of days/week was shown during their first two months transitioning to college (28% at <3 times/week, 36% at 3-4 times/week, 36% at >5 times/week; $P=0.01$).

Table 1:
Desired Amounts of Vigorous Physical Activity among University Students (N=102)

If you could change the amount of vigorous physical activity you are currently participating in, how would you change it?

Response	Freshman	Sophomore	Junior	Senior	All
I would become more active.	71%	88%	46%	59%	65%
I would become less active.	3%	0%	4%	12%	5%
I would not change.	21%	6%	39%	29%	25%
I am not currently active.	6%	6%	7%	0%	5%

During their first and second years of college, reported weekly VPA patterns showed that less than half of all students participated in VPA three or more times a week (28% at <3 times/week, 32% at 3-4 times/week (32%), and 40% at >5 times/week; $P=0.01$), with no significant change throughout remaining college years.

Table 2:
Obstacles that Prevent Participation in Vigorous Physical Activity among University Students (N=102)

What is the main obstacle that prevents you from participating in vigorous physical activity?

Response	Freshman	Sophomore	Junior	Senior	All
School work	30%	29%	21%	25%	26%
Not enough time	49%	53%	50%	50%	50%
Lack of convenient facilities	0%	0%	0%	0%	0%
Do not want to	6%	0%	4%	6%	4%
Other	15%	18%	25%	19%	19%

Student responses about VPA participation are shown

in Tables 1-3. Results in Table 1 show that 65% of all students reported a desire to increase their current VPA, with an even greater response from freshmen

Table 3:
Influences on Decision to Participate in Vigorous Physical Activity among University Students (N=102)

What most influences your decision to participate in vigorous physical activity?

Response	Freshman	Sophomore	Junior	Senior	All
Health	42%	53%	46%	29%	43%
Appearance	30%	18%	12%	18%	21%
Weight	3%	18%	8%	12%	9%
Sports	6%	6%	23%	35%	20%
Enjoyment	0%	6%	12%	6%	5%
Do not want to	3%	0%	0%	0%	1%
Other	3%	0%	0%	0%	1%

(71%) and sophomores (88%). Students cited a lack of time (50%) and schoolwork (26%) as the two main obstacles that prevented their participating in VPA (Table 2). Health (43%) and personal appearance (21%) were reported as the two most influential factors in choosing to participate in VPA (Table 3), with a lower percentage of seniors choosing "health" (29%), and a higher percentage of freshman choosing "personal appearance" (30%). Additionally, a greater number of upper-level students (juniors/23%; seniors/35%) reported that participation in organized sports was an influencing factor in determining the amount of weekly VPA compared to lower-level students (6%).

Discussion and Conclusions

Results from this study suggest that declining physical activity during the initial years of college may influence patterns of inactivity in remaining college years. Although frequency of VPA increased slightly after the first two months of transitioning to college, an overall decline in total number of days was noted compared to students' last year of high school. Additionally, more than two-thirds of all students in this study reported they would like to be more active, with time constraints and school work cited as primary factors or barriers to exercise. These findings are similar to other studies (Bray & Born, 2004; Guyrcsik, Bray & Brittain, 2004; Buckworth & Nigg, 2004). Unfortunately, efforts to help students improve time-management skills to reduce added stress and adopt routine exercise regimens are often unsuccessful, and student compliance with recommended physical activity is more likely to be successful if exercise self-efficacy is assessed and enhanced.

These findings have important implications for

further research about exercise adoption and maintenance among college students, and practical applications for aiding college health educators and health-care professionals in family and consumer sciences. Regular physical exercise is an effective strategy for weight management and can prevent or improve many of the chronic health-related conditions associated with overweight and obesity. A greater understanding of the relationship between self-efficacy and coping with barriers to VPA can be valuable for educators in developing targeted interventions and/or course curriculum for college students transitioning from high school and building life-long patterns as adults.

References

American Obesity Association. (2007). *Obesity in the U.S.* American Obesity Association Facts Sheets. Retrieved May 13, 2008, from http://www.obesity.org/subs/fastfacts/obesity_us.shtm

Bray, S.R. & Born, H.A. (2004). Transition to university and vigorous physical activity: implications for health and psychological well-being. *Journal of American College Health*, 52, 181-188.

Buckworth, J. & Nigg, C. (2004). Physical activity, exercise, and sedentary behavior in college students. *Journal of American College Health*, 53, 28-34.

Centers for Disease Control and Prevention. (2005). *Recommended Physical Activity*. Department of Health and Human Services U.S. Physical Activity Statistics. Retrieved May 13, 2008, from <http://www.cdc.gov/nccdphp/dnpa/physical/stats/index.htm>.

Guyrcsik, N.C., Bray, S.R., & Brittain, D.R. (2004). Coping with barriers to vigorous physical activity during transition to university. *Family Community Health*, 27, 130-142.

Lee, I.M. & Paffenbarger, R.S. (2000). Associations of light, moderate, and vigorous intensity physical activity with longevity. The Harvard Alumni Health Study. *American Journal of Epidemiology*, 151(3), 293-299.

Lowry, R.L., Galuska, D.A., Fulton, J.E., Wechsler, H., Kann, L. & Collins, J.L. (2000). Physical activity, food choice, and weight management practices among U.S. college students. *American Journal of Preventative Medicine*, 18, 18-27.

Salinsky, E. & Scott, W. (2003). *Obesity in America: A Growing Threat*. National Health Policy

Forum Background Paper, 1-31. National Health Policy Forum, Washington, D.C.

SPSS, Version 14.0 for Windows (2005). SPSS, Incorporated, Chicago, IL.

U.S. Department of Health and Human Services (USDHHS). (2000). *Healthy People 2010*. 2nd ed. [Electronic version]. Washington DC: U. S. Government Printing Office. Retrieved May 13, 2008, from <http://www.healthypeople.gov>.

U.S. Department of Health and Human Services (USDHHS). (2001). *The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity*. Washington DC: U.S. Government Printing Office.

Wang, Y. & Beydoun, A. (2007). The Obesity Epidemic in the United States—Gender, Age, Socio-economic, Racial/Ethnic, and Geographic Characteristics: A Systematic Review and Meta-Regression Analysis. *Epidemiologic Reviews*, 29, 6-28.

Factors Influencing Sports Drink Consumption among Children Attending a Sports Camp

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Background

Nineteen percent of U.S. children aged 6-11 are obese (Ogden et al., 2004). Consumption of calorically-sweetened beverages is among the multiple factors contributing to increased rates of overweight and obesity among children. Between 1978 and 2001, the intake of calorically-sweetened beverages increased by 135%. These beverages contribute an average of 278 extra calories daily (Neilsen & Popkin, 2004.) Consumption of calorically-sweetened beverages between meals more than doubles the risk of being overweight among children (DuBois, Farmer, Girard, & Peterson, 2007). When researchers tracked childhood beverage intake for 19 months, analysis revealed that the risk of becoming obese increased by 60% for each additional serving of sugar-sweetened beverage consumed (Ludwig, Peterson, & Gortmaker, 2005). Sugar-sweetened beverages are problematic not only for the extra calories that they provide, but also for the nutrients that they lack such as calcium and vitamins C and D. Sports drinks may replace more nutrient dense foods or beverages such as milk or 100% juice. Table 1 compares the nutritional value of common beverages. Sports drinks contain 50-60 calories per 8 ounce serving, compared to almost 100 calories in the same amount of soda. However sports drinks have less vitamin C than orange juice and less vitamin D and calcium than milk. Water serves to hydrate without providing calories. Grocery and convenience stores typically stock 32 ounce bottles of sports drinks, which contain 200-250 calories per bottle. Sports drinks, like other calorically-sweetened beverages, provide little nutritional value beyond calories to a child's diet. Sports drinks do not provide benefits in athletic performance over water for most athletes (Coombes, 2005). Since rates of overweight continue to increase and beverages contribute 21% of total caloric intake for Americans above two years of age (Neilsen & Popkin, 2004), it is important for family and consumer scientists to understand why children choose to drink calorically-sweetened beverages such as sports drinks.

Purpose

The purpose of this study was to evaluate factors related to sports drink consumption among children.

Table 1. Nutritional Value of Common Beverages (8 oz. serving)

Beverage	Gatorade®	Powerade®	Coca-Cola® Classic	Florida Orange Juice	Juicy Juice® Apple Juice	Fat Free Milk	1% Milk
Calories	50	64	65	110	110	86	102
Sodium (mg)	110	53	22	0	10	127	124
Total Carbohydrate (g)	14	17	18	26	28	12	12
Daily Value Calcium (%)	0	0	0	2	0	30	30
Daily Value Vitamin C (%)	0	0	0	120	120	0	0

Methods

A 55-question survey was developed by researchers to assess sports drink knowledge, beliefs, attitudes, subjective norm, social acceptability, influence of referent others, and sports drink consumption. Subjects were recruited from children attending a sports camp. The study was approved by the university's Institutional Review Board for Human Subjects Protection prior to initiation. The researchers requested participation from parents/caregivers who then signed consent forms on behalf of the subjects. Subjects (n=59) were not allowed to talk to each other during survey completion. Data were analyzed using SPSS (version 14.0, 2005, SPSS Inc, Chicago, IL). Knowledge scores were determined by dividing the number of correct answers by the total number of knowledge questions for each participant. Belief, attitude, subjective norm, social acceptability, and influence of referent others questions were coded using a five point Likert-type scale from agree (+2) to disagree (-2).

Results

Mean age of subjects (n=59) was 10.6+/- 1.4 years with a range of 9-13 years. Subjects were primarily Caucasian (48%), African-American (25%), and Asian (17%). Only 12% of subjects were Hispanic. Subjects answered 55% of the knowledge questions correctly. These questions pertained to the purpose

of sports drinks and hydration during exercise. Subjects reported on their perception of whether coaches, parents, siblings, and friends thought that they should drink sports drinks. Results revealed a positive correlation between the perceived recommendations from coaches ($p \leq 0.01$) and parents ($p \leq 0.001$) and the consumption of sports drinks during exercise. Although more than 96% of subjects currently consumed sports drinks, the majority believed water was better (75%), was healthier for the body (73%), and tasted better than sports drinks (51%). Although only 30% of subjects believed that their families wanted them to drink sports drinks, 57% asked their parents to purchase them. Incentives shown to influence consumption of sports drinks were the new flavors and that “people think it is cool” to drink sports drinks. Subjects believed that drinking sport drinks was good (81%), smart (79%), worthwhile (75%), and healthy (58%). Subjects reported that they thought sports drinks taste good (86%), would make them run faster (42%), and make them stronger (37%). Overall subjects felt positively about sports drink use. However, 65% of subjects thought water was best to drink during exercise.

Conclusions and Implications

Although the majority of subjects believed that water was best to drink during exercise, results indicate that parents, coaches and new flavor options may influence adolescents’ decisions to consume sports drinks. New flavor combinations and color options seem to appear regularly in the local supermarkets and convenience stores. For example, Gatorade® has recently introduced Gatorade® AM in two flavors specifically for those who choose to exercise in the morning (Gatorade®, 2007). Powerade® customers can choose from a variety of flavors and then collect codes from under the bottle caps to win rewards from mycokerewards.com ranging from video games to plush bears (My Coke Rewards, 2007). Advocare® introduced KickStart Spark™, an energy drink marketed for children age four and over (Advocare®). To the dismay of sports nutrition and consumer science professionals, the concoction contains added caffeine, chromium, taurine and other “neuroactive” amino acids. The Beverage Guidance Panel recommends that with the exception of endurance athletes, sports drinks should be consumed sparingly (Popkin et al, 2006).

Among this population, knowledge level about sports drinks was poor indicating a lack of understanding of the intended purpose of sports drinks for the athlete. Results indicate the need for consumer science professionals to educate both parents and coaches on proper hydration and exercise. Early education about nutrition and consequences of excess

energy may aid in preventing future health complications for adolescents.

References

- Advocare®. KickStart Spark™: Energy and focus just right for kids. Accessed January 5, 2008 at <https://advocare.com/Microsite/Images/Store/Labels/K2082.pdf>.
- Coombes, J.S. Sports drinks and dental erosion. *American Journal of Dentistry*, 18(2), 101-104.
- DuBois, L., Farmer, A., Girard, M., & Peterson, K. (2007). Regular sugar-sweetened beverage consumption between meals increases risk of overweight among preschool-aged children. *Journal of the American Dietetic Association*, 107, 924-934.
- Gatorade®. Thirst quencher Gatorade® AM. Accessed January 5, 2008 at <http://www.gatorade.com/products/am/>.
- Ludwig, D.S., Peterson, K.E., & Gormaker, S.L. (2001). Relation between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis. *Lancet*, 357, 505-508.
- My Coke Rewards. Rewards and Contest. Accessed January 5, 2008 at [http://www.mycokerewards.com/index.jsp?adParam=1#windowType:catalog/searchType:points/categoryID:\[1001,2500\]/Skin:true/SkinType:promo/SkinID:home](http://www.mycokerewards.com/index.jsp?adParam=1#windowType:catalog/searchType:points/categoryID:[1001,2500]/Skin:true/SkinType:promo/SkinID:home).
- Neilsen S.J. & Popkin, B.M. (2004). Changes in beverage intake between 1977 and 2001. *American Journal of Preventive Medicine*, 27:205-210.
- Ogden, C.L., Carroll, M.D., Curtin, L.R., McDowell, M.A., Tabak, C.J., Flegal, K.M. (2004). Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA*, 295:1549-1555.
- Popkin, B.M., Armstrong, L.E., Bray, G.M., Caballero, B., Frei, B., Willet, W.C. (2006). A new proposed guidance system for beverage consumption in the United States. *American Journal of Clinical Nutrition*, 83, 529-542.

Public Knowledge and Selection of Organic and Natural Foods

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Background

Organic foods originate from farms or producers that meet the standards set by the United States Department of Agriculture (USDA) National Organic Program (NOP). Neither synthetic pesticides nor synthetic fertilizers are used to grow or produce organic foods. If foods are sold or labeled as organic, then they must be produced according to NOP standards (National Organic Program). The regulations require that land for organic crop production will not have prohibited substances applied for at least three years prior to the harvest of an organic crop. Producers of organic livestock are required to feed 100% organic feed and are allowed to use approved vitamin and mineral supplements. An organic producer must become certified before he is able to use the "USDA Organic" seal. (See Figure 1.)

The NOP allows producers who are certified by the NOP to label their products as "100% organic", "organic", or "made with organic products". Those labeled "100% organic" must contain only organically produced ingredients with the exception of salt and water. If a product is labeled "organic", it must contain at least 95% organically produced ingredients (except water and salt). Products labeled "made with organic ingredients" must contain at least 70% organic ingredients. None of these labeled products are allowed to be produced using excluded production methods, sewage sludge, or ionizing radiation. The USDA "Organic Seal" may only be used for products that are designated as "100% organic" or "organic", but not those designated as "made with organic products." Fines for knowingly selling or labeling a product as organic that does not meet USDA standards can reach \$11,000 violation. The USDA does not claim that organic foods are either safer or more nutritious than foods not produced using organic standards (NOP).

Organic food is not synonymous with natural food. Definitions of natural food will vary depending upon the source. The Food Marketing Institute refers to the phrase "natural food" as foods that are minimally processed, free of growth hormones, antibiotics, hydrogenated oils, stabilizers and emulsifiers that are not present naturally in the food. They must not

contain synthetic preservatives, artificial sweeteners, color, flavors or other artificial additives (Food Marketing Institute). The USDA Food Safety and Inspection Services (FSIS) terms natural poultry or meat as that food which is minimally processed, containing no artificial ingredient or added color. The FSIS controls certain food labeling practices for meat and poultry including the use of the terms natural, free-range, no antibiotics, and no hormones among others (USDA).

Advocates of organic foods claim that organic foods are healthier, safer, or tastier than their conventional counterparts. Research has reported mixed results. A recent study reported higher breast milk composition of the beneficial conjugated linoleic acid (CLA) isomers among breastfeeding mothers who incorporated organic dairy and meat products into their diets (Rist et al., 2007). Organic milk has been reported to have higher proportions of omega-3 fatty acids than conventional milk and a lower omega-6 to omega-3 ratio (Ellis et al., 2006). Urinary concentrations of pesticide metabolites among 3-11 year olds were compared before and after a diet that replaced commonly eaten conventional foods with organic versions of the foods (Lu et al., 2006). Researchers reported that median urinary concentrations of metabolites for malathion and chlorpyrifos (two pesticides) dropped to undetectable levels immediately after the organic diets were introduced. Levels remained there until reintroduction of the regularly consumed diet. Likewise, National Research Council (NRC) charged that the major source of pesticide exposure for infants and children is from dietary intake (NRC, 1993). When organic and conventionally grown grapefruits were compared, researchers found the conventional grapefruit to have better color, more lycopene, less bitter taste and better acceptance by a consumer panel (Manthey & Buslig, 2007). Consumer tests of organically and conventionally grown lettuce, spinach, arugula mustard greens, tomatoes, onions, and cucumbers revealed no significant differences in consumer-preferences (Zhao et al., 2007).

According to the Organic Trade Association, organic food sales grew by 20.9% in 2006 (Organic Trade Association). In 2006, five categories of organic

food showed rampant sales growth exceeding 20%. These categories were meat (29%), dairy (25%), fruits and vegetables (24%), breads and grains (23%), and snack foods (21%). Organic foods have gained popularity and established a foothold in even the most mainstream supermarkets such as Wal-Mart®. This organic boom has not only influenced foods marketed for adults, but infants and children as well. Gerber® has introduced organic baby foods to its product line.

Figure 1. USDA Organic Seal



Purposes

The purposes of this study were to: 1) determine the public's knowledge about and information sources regarding organic and natural foods, 2) identify which organic foods that shoppers value most, and 3) identify factors influencing shoppers' buying preferences.

Methods

A nine-question survey was developed to determine subjects' knowledge of organic and natural foods, buying practices, sources of information regarding organic foods, reasons for shopping decisions, sex, and age. Categories were used to determine subjects' age (i.e. 26-35 or 36-45). Subjects (n=150) were a convenience sample of shoppers at an upscale specialty foods grocery store in Fort Worth, Texas. The study was approved by the Department of Nutritional Sciences Institutional Review Board for Human Subjects Protection prior to initiation. Subjects were approached for participation by researchers at the store entrance and requested to share their opinions and knowledge of natural and organic foods. Following survey completion, data were analyzed using SPSS (version 14.0, 2005, SPSS Inc, Chicago, IL).

Results

Subjects (n=150) were 57% female (n=86) and 43% male (n=64). Ages varied among the sample. Almost 25% of subjects were from 46-55 years of age. Only 38% of subjects could accurately define organic food. Subjects reported that the primary information sources about organic and natural foods were supermarkets (27%), internet (19%), and magazines (18%). The most popular categories of organic foods purchased were produce (95%), meats

(71%), and dairy foods (65%). The most popular categories of natural foods purchased were meats (61%), produce (46%), and snacks (42%). Subjects reported the reasons that they preferred organic over conventional foods were due to conventional foods' presence of monosodium glutamate (MSG) (21%), pesticides (21%), hormones (20%), nitrates (15%), antibiotics (12%), and genetic bioengineering (11%).

Conclusions and Implications

Consumers are concerned about the safety of the foods that they eat. The subjects in the current study chose to purchase organic foods to avoid potential harm from food additives and contaminants. Many consumers choose to pay the extra expense associated with organic and natural foods. This sample preferred to spend their grocery dollars on organic produce, meats, and dairy food. The public at large remains unfamiliar with what the higher price of organic food procures. The subjects gained information from sources such as supermarket flyers, internet, and magazines. According to the NOP, American consumers can rest assured that foods labeled "organic" were produced "using the highest organic production and handling standards in the world" (NOP). However, the standards for natural foods remain far more lax and consumers are familiar with neither. Although the FSIS allows the term natural to be used to describe meat and poultry, unlike the organic food standard, it is not a certified process. Family and consumer scientists have the opportunity to educate the public regarding organic and natural foods, their proposed differences, benefits and costs. As organic food production continues to increase and customer demand for high quality foods increases, more consumer will require accurate information to make informed decisions on how best to spend their food dollars.

References

- Ellis, K.A., Innocent, G., Grove-White, D., Cripps, P., McLean, W.G., Howard, C.V., et al. (2006). Comparing the fatty acid composition of organic and conventional milk. *Journal of Dairy Science*, 89, 1938-1950.
- Food Marketing Institute. Natural and Organic Foods. Accessed January 9, 2008 at <http://www.fda.gov/ohrms/dockets/dockets/06p0094/06p-0094-cp00001-05-Tab-04-Food-Marketing-Institute-voll.pdf>.
- Manthey, JA. & Buslig, B.S. (2007). Organic vs. conventionally grown Rio Red whole grapefruit and juice: comparison of production inputs, market quality, consumer acceptance and human health-bioactive compounds. *Journal of Agricultural and Food Chemistry*, 55, 4474-4480.

NOP (National Organic Program). Organic production and handling standards. Accessed January 9, 2008 at <http://www.ams.usda.gov/nop/FactSheets/ProdHandE.html>.

NOP (National Organic Program). Organic food standards and labels: the facts. Accessed January 9, 2008 at <http://www.ams.usda.gov/nop/consumers/brochure.html>.

NRC (National Research Council). (1993). *Pesticides in the Diets of Infants and Children*. Washington, DC: National Academy Press.

Organic Trade Association. Organic Trade Association's 2007 Trade Manufacturer's Survey. Accessed January 9, 2008 @ <http://www.ota.com/pics/documents/2007ExecutiveSummary.pdf>.

Rist, L., Mueller, A., Barthel, C., Snijders, B., Jansen, M., Simoes-Wust, A.P., et al. (2007). Influence of organic diet on the amount of conjugated linoleic acids in breast milk of lactating women in the Netherlands. *British Journal of Nutrition*, 97(4), 735-743.

USDA. Food labeling meat and poultry labeling terms. Accessed January 9, 2008 at <http://www.fsis.usda.gov/FactSheets/Meat&PoultryLabelingTerms/index.asp>.

Zhao, X., Chamber IV, E., Matta, Z., Loughlin, T.M., & Carey, E.E. (2007). Consumer sensory analysis of organically and conventionally grown vegetables. *Journal of Food Science*, 72(2), S87-S91.

Sensory Evaluation of Soy Sugar Cookies

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The increase in elderly US population leads to the upward spiral of health care costs. This situation is opening up venues to look for food adjuncts to the medicinal remedies. The most valuable adjuncts to medicinal remedies are functional foods containing phytochemicals that render health benefits besides providing normal sustenance to the body (Nelson, 1999). Phytochemicals are those plant derived natural compounds that can manifest their effects for the benefit of human health. The phytoestrogens present in soy in the form of isoflavones can amend some of the imbalances caused by the absence of estrogens in the Western diets (Setchell, 1998). Phytoestrogens present in soy mimic physiologically or structurally as mammalian estrogens and thus impart health benefits (Turner, Agatonovic-Kustin, & Glass, 2007). Food and Drug Administration approved a cholesterol-lowering health claim in 1999 that states that consumption of 25 grams of soy daily may reduce the risk of heart disease by reducing blood cholesterol. Wuttke, Hubertus, and Seidlova-Wuttke, (2007) reported that isoflavones in soy protect humans from several types of cancers including breast cancer. In spite of well documented health benefits of soy, the US population's consumption of soy products is reported to be very low. Babb (2002) reported as a result of a study that 70% of those surveyed rated soy products as very or somewhat healthy but only 27% responded having used soy once a week or less.

Purpose

This study was undertaken to ascertain the acceptability of sugar cookies with varying levels of soy flour among members of an educated community. Sugar cookies with soy flour can be an effective tool to increase soy consumption in a community on regular basis so it can deliver its health benefits.

Methods

The study was approved by the Sam Houston State University's Institutional Review Board's Protection of Human Subjects Committee. Four types of sugar cookies were made using a standardized recipe (Molt, 2006), no substitution was done in one and was used as a control, in another 10% soy flour was replaced for all purpose flour, in another the soy flour substitution was 25%, and yet another contained 50% soy flour to 50% all purpose flour. One hundred thirty-one people were randomly selected from

within Sam Houston State University campus, full information regarding the nature of the study was provided, and then were asked to become sensory evaluators of the sugar cookies on a hedonic scale of 1 the lowest to 5 the highest. Those individuals filled out a survey form also to provide demographic data. Out of 131 sensory evaluators included in this study, 55 were male and 76 female. Their ages ranged from 18 to 62 years. Sixty-nine percent of them were White, 22% Black, 8% Hispanics, and 2% Asian. Sensory evaluation and demographic data collected were subjected to descriptive statistical analyses. A significant $p \leq 0.05$ was used.

Results

Sugar cookies were liked by 98% of the participants. Although 92% participants reported food allergies but 99 % reported that allergies were not related to soy products. Seventy-seven percent of the participants had eaten soy before but 23% had never eaten soy products before. Only 1% of the sensory evaluators ate soy products every day, 12% once a week, 13% once a month, and 75% ate soy products rarely, although 73% of them have had heard of health benefits of the soy products. These findings are similar to Babb (1999) as stated above. Fifty-seven percent of the participants surveyed said that they will purchase and cook soy products and 43% said they will not. Only 5% of the survey participants were diagnosed with diabetes, none were diagnosed with heart disease or cancer although 5% were diagnosed with lung disease such as asthma.

Ninety-eight percent of the participants liked eating sugar cookies. Seventy-seven percent of the participants had eaten soy before but 23% had never eaten soy products prior to the study. There were no significant differences among the means of likability scores of 10%, 25% and 50% soy substituted sugar cookies. The likability scores are higher for 50% soy substituted sugar cookies than 10% soy substituted soy sugar cookies (Table 1). Although not statistically significant ($p \geq .05$) but these results are very important in terms of product acceptability because substantial amount of healthy soy flour can be delivered to the consumer through sugar cookies that are very popular in (98%) the population studied. Fifty-seven percent of the participants surveyed said that they will purchase and cook soy products and 43% said they will not. Only 5% of the survey

participants were diagnosed with diabetes, none were diagnosed with heart disease or cancer although 5% were diagnosed with lung disease such as asthma.

Table 1: Descriptive Statistics of Sensory Scores for Control and Soy Substituted Cookies

		Sum of Squares	df	Mean Square	F	Sig.
Score for 25% soy substitution	Between Groups	87586.109	37	2367.192	1.521	.055
	Within Groups	144780.303	93	1556.777		
	Total	232366.412	130			
Score for 50% soy substitution	Between Groups	132965.972	37	3593.675	1.163	.277
	Within Groups	287375.631	93	3090.061		
	Total	420341.603	130			
Score for 10% soy substitution	Between Groups	10285.066	37	277.975	.276	1.000
	Within Groups	93583.636	93	1006.276		
	Total	103868.702	130			
Score for original product	Between Groups	179340.917	37	4847.052	.945	.566
	Within Groups	477084.442	93	5129.940		
	Total	656425.359	130			

Discussion and Applications

Studies (McCord, 1996; Dinardo, 2002) indicate that it takes daily intake of two to three ounces of soy products or 25 grams of soy proteins to obtain good health benefits of soy to prevent cancer, osteoporosis, and heart disease. The results of this study are important in the sense that there is no significant difference ($p \leq .05$) in the likeability scores among all cookies. The higher likability (not statistically) of 25% and 50% soy substituted sugar cookies as compared to 10% soy substituted sugar cookies (Table 1) by the population studied is important in the sense that more soy can be part of daily diet to maintain health. The health benefits rendering isoflavones in soy are retain well when consumed in foods (Food News, 1999). In keeping with the results of this study other products with reduced calories can be prepared such as sugar-free cookies or cup cakes that can deliver sufficient amounts of soy flour without delivering excessive kilocalories. The results in this study are in accord with the conclusions drawn by Babb (1999) in a review article which stated that only 27% of the people who reported having heard of health benefits of soy ever ate it. Our study shows a 12 % of the participants ate the soy products even after having the knowledge of soy being good to their health. The data clearly shows that US population is getting message but compliance is somehow lacking. It may be perhaps there are not enough commonly acceptable products containing soy in the market. Turner et al., (2007) argue against giving extract of soy containing isoflavones to women because of their

side effects but accepted the continued consumption of foods containing soy for their benefits. Therefore, it makes a great argument in favor of producing familiar and acceptable products for the US consumers containing soy flour so they can continue to obtain health effects of soy through enjoyable foods. Family and Consumer Science educators need to emphasize the benefits of soy through foods than extracts in light of the emerging science (McCord, 1996).

References

- Babb, M. (2002). Consumers rate soy as healthy, but slow to include soy foods in daily diet. *Journal of The American Dietetic Association*, 102 (i4), S3(1).
- Dinardo, A. W. (2002). Sorting out soy. *E Magazine: The Environmental Magazine*, 13 (4), 42.
- Food News. (1999). Adding soy to cereals. *R&D Magazine: Food Technology Section*, 41(9), 97.
- McCord, H. (1996). Savor the new white-hot superfood. *Prevention*, 79(5), 79.
- Molt, M. (2006). *Food for Fifty* (12th ed.). Upper Saddle, NJ: Pearson/Prentice Hall. 325-326.
- Nelson, N. J. (1999). Purple carrots, margarine laced with wood pulp? Nutraceuticals move into the supermarket. *Journal of National Canadian Institute*, 91, 755-757.
- Setchell, K. D. R. (1998). Phytoestrogens: the biochemistry, physiology, and implications for human health of soy isoflavones. *American Journal of Clinical Nutrition*, 68 (supplement), 1333S-46S.
- Turner, J.V., Agatonovic-Kustin, S., & Glass, B. D. (2007). Molecular aspects of phytoestrogens receptors. *Journal of Pharmaceutical Sciences*, 96 (8), 1879.
- Wuttke, W., Hubertus, J., & Seidlova-Wuttke, D. (2007). Isoflavones- Safe food additives or dangerous drugs? *Ageing Research Reviews*, 6 (2), 150.

Nutrition Facts Label Use, Restaurant Choices, and Fat Intake among Adults

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Background

The U.S. Food and Drug Administration (FDA) have published regulations which mandated nutrition labeling for most packaged foods (U.S. FDA, 2003). In addition, authorization was approved for health and nutrition claims on the labels of products for restaurants (Foulke, 1996). Since that time, restaurants have increasingly made nutrition information available to the public. One study reported that two out of three major table-service restaurant chains now provide nutrition information, at minimum, for the items offered as “healthy” choices (Harnack, 2006). Numerous researchers have looked at the prevalence of nutrition label usage, and have reported usage rate of consumers to be approximately 50 to 80 percent (Blitstein & Evans, 2006, Huang, et al., 2004, Bowman, 2005, Rothman et al., 2006, & Satia et al., 2005). It seems that sufficient nutrition information is available to consumers, but in spite of the availability of information, incidence of overweight and obesity has continued to increase in the United States (Bowman et al., 2004). Researchers sense a lack of use and application of nutrition information among adults, which could lead to unhealthy lifestyle choices, increases in body weight and the related preventable diseases such as diabetes, high blood pressure, and heart disease.

Purpose

The objective of this study was to assess the prevalence of consumers’ nutrition-facts label use, application of the nutrition information at restaurants, and overall fat intake.

Methods

Instrument

The university’s Institutional Review Board approved the methods for the study. A two-part, self-administered questionnaire was designed and validated by the researchers, piloted, reformatted, and the corrected version used in data collection. Part-one of the questionnaire consisted of 22 closed-ended questions that examined food label usage, restaurant

choices and habits, and demographic characteristics. Twelve of the closed-ended questions used a 4-point Likert-type scale, while 10 were dichotomous in nature. Part-two was a modified version of MEDFICTS[®] dietary assessment tool (National Institutes of Health, 2001) which measures an individuals’ consumption of total fat, saturated fats and dietary cholesterol.

Sample

Three hundred and thirty-two adults from Huntsville, Houston, The Woodlands, and Conroe participated in the study. Data were collected from September 2007 through November 2007.

Analyses

Data were statistically analyzed using SPSS[®] version 15.0 (SPSS, 2008). Body mass indices (BMI) and MEDFICTS scores were calculated from self-reported data. MEDFICTS[®] scores were determined by multiplying respondents’ frequency of eating high fat foods by assigned points for serving sizes and totaled. A score of 70 or more indicates participants’ excess intakes of total fat, saturated fat and dietary cholesterol (Kris-Etherton et al., 2001 & Srinath, U., Shacklock, F., Scott, L., Jaax, S., & Kris-Etherton, P.M., 1993). A score between 40 and 69 means the respondents were following a “heart healthy diet”; whereas, a score less than 40 suggests compliance with a lifestyle approach that has been proven to reduce heart disease risks and aid in weight reduction (Kris-Etherton et al., 2001 & Srinath et al., 1993).

Pearson’s correlation coefficients were used to evaluate relationships between variables such as age, BMI and MEDFICTS scores. Chi square analyses were used to determine significant differences among the frequencies of categorical variables, and student t-test analyses were also performed.

Results

Results showed participants were mostly females (74.2%), White (68.1%), and had some college education (51.7%). Participants’ mean BMI was 27.1; 41.8% were currently dieting and 31.2% were

eating out three-to-six meals per week. Results showed that over 60% of the participants (n = 226) were nutrition-facts label users; of those, 28.4% indicated label use most-of-the-time; while 40% were users sometimes.

A chi-square test of independence found significant interaction ($\chi^2 (7) = 30.79, p = 0.000$) between gender and the label information most frequently used by participants. Women were more likely to use information on calories (31.1%), fat (28%), carbohydrate (15.1%), and to a lesser extent other choices than men who used calories (12.7%), fat (30.4%), and serving size (11.4%).

While dining at a restaurant, 53.2% of the participants ordered healthy items sometimes or most-of-the-time, 52.3% reported splitting dinner portions sometimes, while 68.5% took part of the meal home sometimes or most-of-the-time. Only 35.1% of the participants reported ordering kid's size meals at restaurants.

Significant ($p < 0.05$) interactions were found for dieting and healthy restaurant habits. Dieters were more likely than non-dieters to read nutrition facts available at restaurants ($\chi^2 = 9.775; p = 0.021$), check nutrition facts on the internet ($\chi^2=16.712; p = 0.001$), and to order healthy menu items ($\chi^2=12.421; p = 0.006$). Mean scores were calculated for total fat intake and the results showed that participants who reported an distinct understanding of the food label had a mean score of 46.4 ± 27.4 compared to 59.3 ± 31.8 for those who understood most of the food label, and 69.8 ± 27.4 for those who understood some of the label. For individuals who reported no understanding of the food label, mean scores were highest (73.0 ± 37.3). This is an indication that individuals who read and understood the food label reported lower total fat intake compared to those who reported no understanding. Table 1 shows significant ($p < 0.05$) influence of reported healthy restaurant habits on total fat intake scores among participants.

Conclusions, Implications and Limitations

The main contribution of this study is discovering that utilizing nutrition facts labels and practicing healthy restaurant habits both appear to result in lower total dietary fat intake among free-living consumers. Using the MEDFICTS assessment criteria, even participants with some understanding of the nutrition-facts labels scored within the healthy range of 40-69 points for fat intake, but participants who reported no understanding of the nutrition-facts labels scored more than 70 points, which is an indication of higher intakes of total fat, saturated fat and dietary cholesterol in their diets. This lack of

understanding of the nutrition-facts labels coupled with higher MEDFICTS scores is indicative of a need for dietary change among participants to reduce intakes of total fat, saturated fat and dietary cholesterol. From a family and consumer science and nutrition educators' perspective, the results indicate a need for educating consumers on the effect nutrition facts can have on health habits and total fat intake.

Due to the fact that almost three-fourths of the sample was females and over two-thirds were White, this study may have some gender and ethnic bias. It would be beneficial to replicate the study with a larger target and more ethnically diverse population to see if these findings hold true for other consumers in other states or other areas of Texas.

Table 1
Influence of Healthy Restaurant Habits on Total Fat Intake

Restaurant Habits	Mean Medficts Score		P-Value
	Never/Rarely	Sometimes/Most-Of-The-Time	
Read nutrition facts at restaurant (N=328)	62.81 (± 31.78)	44.84 (± 30.70)	$t=-4.993; p=0.000^{**}$
Check nutrition facts on internet (N=330)	58.74 (± 31.53)	37.31 (± 34.54)	$t=-3.941; p=0.000^{**}$
Order "healthy" items (N=330)	70.55 (± 32.72)	43.66 (± 26.86)	$t=-8.196; p=0.000^{**}$
Split dinner portion (N=330)	63.68 (± 33.67)	49.34 (± 30.06)	$t=-4.087; p=0.000^{**}$
Take part to-go (N=329)	57.35 (± 35.18)	55.75 (± 31.47)	$t=-0.412; p>0.05^{NS}$
Order kids meal (N=326)	58.41 (± 33.19)	53.21 (± 31.09)	$t=-1.383; p>0.05^{NS}$
Eat all of portion (N=328)	51.76 (± 32.01)	59.54 (± 32.82)	$t=2.137; p=0.033^*$
"Super-size" (N=328)	51.93 (± 30.17)	76.50 (± 35.28)	$t=5.522; p=0.000^{**}$

*=p-value is less than 0.05; ** = p-value is less than 0.001; NS = not significant, p-value is greater than 0.05

References

Blitstein, J., & Evans, D. (2006). Use of nutrition facts panels among adults who make household food purchasing decisions. *Journal of Nutrition Education & Behavior*, 38, 360-364.

Bowman, S. (2005). Food shoppers' nutrition attitudes and relationship to dietary lifestyle practices. *Nutrition Research*, 25, 281-293.

Foulke, J. (1996). Nutrition information on restaurant menus. US Food and Drug Administration website. Accessed November 16, 2007, from <http://www.cfsan.fda.gov/~lrd/tpmenus.html>.

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Consumer's Knowledge and Perceived Understanding of MyPyramid 2005: A Challenge for Nutrition Educators in Texas

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Background

MyPyramid is the basis of nutrition recommendations for the general healthy population and should be a tool that is widely used by nutrition educators to help people make better choices about their food intake and activity levels. MyPyramid, recently released by the United States Department of Agriculture (USDA) is an update on the well known U.S. food guide pyramid (USDA, 2005). This new symbol emphasizes physical activity, moderation and an appropriate combination (variety) of food groups that meets the requirement for an individual's diet. MyPyramid was designed to educate consumers about a lifestyle that is consistent with the most current *Dietary Guidelines for Americans* (United States Department of Health and Human Services, 2005).

The new MyPyramid has made significant changes from the old version. No foods are pictured on the outside of the pyramid, food quantities are provided in cups and ounces instead of servings, and an individual climbing stairs represents the incorporation of physical activity. The symbol now contains eight categories including six food groups (grains, vegetables, fruits, oil, milk, and meat and beans) as well as physical activity and discretionary calories as two new features. As part of the food guidance systems, consumers are asked to visit MyPyramid's website for personalized nutrition information based on age and physical activity levels (USDA, 2005).

Purpose

Since the release of MyPyramid in April 2005 (USDA, 2005), no studies have reported the extent to which consumers comprehend the new nutrition education tool. Without adequate research, it is difficult to determine whether recommendations put forth in MyPyramid are reaching its target audience,

the general public. More importantly, it is necessary to evaluate consumers' understanding of the intended messages of this food guide. There is a paucity of data on consumer understanding of MyPyramid; therefore, it is imperative that researchers conduct cross-sectional studies to provide nutrition educators with information that can aid in the formulation of appropriate strategies to meet the needs of the consumer.

The primary purpose of this study was to assess knowledge and perceived level of understanding of the 2005 MyPyramid for healthy consumers of various ages. The primary research question was: To what extent does the public understand MyPyramid and its components?

Methodology

The university's Institutional Review Board approved the methods for the study. A 4-page, 27-item, self-administered questionnaire was developed by the researchers, piloted, reformatted, and the validated version used in data collection. The questionnaire examined participants demographic information, familiarity with the symbol, knowledge of the messages and overall understanding of MyPyramid. Before administering the questionnaire, participants were informed of the study's purpose and their personal rights; those who agreed to participate were asked to sign a consent form prior to completing the survey. A total of 1,029 participants were recruited in this cross-sectional study, but 972 persons from the general public, in school, hospital, restaurant, and health center locations, returned completed questionnaires and were included in the analysis. Participants represented varying ethnicities and levels of education, and were residents of Huntsville, Brenham, Houston, The Woodlands, and Conroe, Texas.

A rating scale of 1-10 examined consumers' level of understanding of MyPyramid. This self-rated scale was assigned percentage scores which means a rating of 1 was equivalent to 0-10% level of understanding; whereas, a rating of 2, 3, 4, 5, 6, 7, 8, 9 or 10 were given percentage level scores of 20-100%. Seventeen questions were used to assess consumers' knowledge on various aspects of MyPyramid. Data were statistically analyzed using SPSS[®] version 15.0 (SPSS, 2008). Descriptive statistics, cross tabulations, chi-square, and one-way ANOVA tests were utilized in the analyses of the data.

Results

Demographic characteristics for gender, age, ethnicity and education level were analyzed. Results showed no statistically significant differences for age and ethnicity; however, significant gender differences $\{\chi^2(6) = 19.884, p = .003\}$ were observed. A larger number of females were enrolled in the study than males. Chi-square test of independence showed significant differences $\{\chi^2(21) = 50.029, p = .000\}$ among the education levels of the participants. Subjects were more likely to report some college education than some high school or associate degrees.

For ease of analysis, data were divided into two age-categories. Participants were asked to indicate whether they were familiar with MyPyramid and the results for the 18-30 age-group ($n=678$) indicated that 46.3% ($n = 314$) reported familiarity with MyPyramid. Participants were also asked to indicate which media outlets alerted them to the new nutrition tool; results for the 18-30 age group indicated that their main media outlet for obtaining this information was in the classroom. Results for the over-30 age-group ($n = 294$), showed 53.7% ($n = 158$) were familiar with MyPyramid, and their media for receiving the alert primarily came from health professionals, magazines, and television. A chi-square test of independence was calculated comparing the frequency of media outlets with age-categories and a significant interaction was found $\{\chi^2(7) = 160.992, p = .000\}$ between those variables.

Knowledge questions examined the correct interpretation of images and representation of the colors located outside MyPyramid. Knowledge questions also examined recommended messages, such as, amounts and types of specific foods in groups from the inside of MyPyramid. Results showed that, out of a possible score of 17, the 18-30 age-group's mean score was 6.03 ± 3.9 compared to the over-30's mean score of 7.05 ± 4.3 . One-way ANOVA was computed for those variables, and a highly significant difference was found between the

age categories [$F(1, 971) = 12.778; p\text{-value} = .000$] and knowledge scores.

For participants self-rated level of understanding, results showed that 33.2% of the 18-30 age-group and 37.1% of the over-30 age-group reported a 0-10% level of understanding. Within the same age-categories, only 8.8% and 5.1% of the participants in the respective groups reported a 70% level of understanding. In addition, 11% percent in each age-category reported an understanding level of 50%.

Due to the new nature of MyPyramid, participants were asked to indicate their preference for the new pyramid compared to the old food guide. The results showed that 43% of the participants preferred the old pyramid compared to 18% who preferred MyPyramid.

Discussion and Conclusions

MyPyramid is an education tool designed to promote healthy eating and increase physical activity of healthy individuals. It is critical that consumers understand the recommendations of this new tool. This study is the first of its kind to examine consumer's knowledge and understanding of the tool; there were limitations in that the sample was a convenience sample recruited from a variety of locations. In addition, a large proportion of the sample was female ($n = 635, 65.3\%$), white ($n = 698, 71.8\%$), and was currently enrolled in college. The researchers sought to determine how many consumers were familiar with the new nutrition education tool developed by the USDA and the perceived level of their comprehension. For all ages completing the study, almost half reported familiarity with the new food guidance system. When perceived knowledge was compared to actual knowledge scores, the results showed that many of the participants did not fully comprehend the recommendations put forth in MyPyramid.

These findings indicate that there is need to increase efforts to educate consumers on the messages and recommendations of the new food guide system. Nutrition educators and Family and Consumer Science teachers need to develop strategies that will foster greater comprehension and retention of nutrition information among consumers. More research is needed on the effectiveness of this valuable tool. Messages need to be tailored to meet specific clientele.

References

SPSS. (2008). Data analysis with comprehensive statistics software. Retrieved from <http://www.spss.com/spss/>.

United States Department of Agriculture. (2005). MyPyramid. Retrieved from <http://www.mypyramid.gov/>.

United States Department of Health and Human Services. (2005). Dietary Guidelines for Americans. Retrieved from <http://www.hhs.gov/>.

Nutrition Facts Label Use, Restaurant Choices, and Fat Intake among Adults (Continued from Page 33)

Harnack, L. (2006). Availability of nutrition information on menus at major chain table-service restaurants. *Journal of the American Dietetic Association*, 106, 1012-1015.

Huang, T., Kaur, H., McCarter, K., Nazir, N., Choi, W., & Ahluwalia, J. (2004). Reading nutrition labels and fat consumption in adolescents. *Journal of Adolescent Health*, 35, 399-401.

Kris-Etherton, P., Eissenstat, B., Jaax, S., Srinath, U., Scott, L., Rader, J., & Pearson, T. (2001). Validation for MEDFICTS, a dietary assessment instrument for evaluating adherence to total and saturated fat recommendation of the National cholesterol Education Program step 1 and step 2 diets. *Journal of the American Dietetic Association*, 101:81-86.

National Institutes of Health. (2001). Third report of the Expert Panel on Detection, Evaluation, and Treatment of High blood cholesterol in adults. Washington, DC: National Institutes of Health, National Heart, Lung, and Blood Institute.

Rothman, R., Housam, R., Weiss, H., Davis, D., Gregory, R., Gebretsadik, T., Shintani, A., & Elasy, T. (2006). Patient understanding of food labels: Role of literacy and numeracy. *American Journal of Preventative Medicine*, 31, 391-398.

Satia, J., Galanko, J., & Neuhouser, M. (2005). Food nutrition label use is associated with demographic, behavioral, and psychosocial factors and dietary intake among African Americans in North Carolina. *Journal of The American Dietetic Association*, 105: 392-402.

Srinath, U., Shacklock, F., Scott, L.W., Jaax, S., & Kris-Etherton, P.M., (1993). Development of MEDFICTS – A dietary assessment instrument for evaluating fat, saturated fat and cholesterol intake. *Journal of the American Dietetic Association*, 93: A-105.

U.S Food and Drug Administration, (2003). The food label. US Food and Drug Administration

website. Accessed November 16, 2007 from <http://www.cfsan.fda.gov/~dms/fdnewlab.html>.

An Inside View of Recruitment and Retention of FCS Secondary Teachers (continued from page 9)

Miller, S. H., & Meszaros, P. S. (1996). Study of national incoming supply and demand for family and consumer sciences teachers and extension educators. *Journal of Family and Consumer Sciences*, 88(1), 51-54.

Tripp, P.J. (2006). A profile of California's secondary family and consumer sciences teachers. *Journal of Family & Consumer Sciences*, 98(1), 60-64.

Werhan, C., & Way, W.L. (2006). Family and consumer sciences programs in secondary schools: Results of a national survey. *Journal of Family & Consumer Sciences*, 98(1), 19-25.

Instructional Strategies For Diverse Learners (Continued from page 7)

Lessow-Hurley, J. (2003). *Meeting the needs of second language learners, an educator's guide*. Alexandria, VA: Association for Supervision and Curriculum Development.

National Clearinghouse for English Language Acquisition and Language Instruction Education programs. Retrieved June 15, 2005 from <http://www.ncela.gwu.edu/pubs/resource/schref.htm>

Saravia-Shore, M., & Garcia, E. (1995). Diverse teaching strategies for diverse learners. In R. W. Cole (Ed.), *Educating everybody's children: Diverse strategies for diverse learners* (pp. 47-74). Alexandria, VA: Association for Supervision and Curriculum Development.

Slavin, R. E. (1991). Synthesis of research on cooperative learning. *Educational Leadership*, 48(5), 71-82.

Snowman, J., & Biehler, R. (2003). *Psychology applied to teaching* (10th ed.). Boston: Houghton Mifflin.

Vaughn, S., Bos, C. S., & Schumm, J. S. (2003). *Teaching exceptional, diverse, and at-risk students in the general education classroom* (3rd ed.). Boston, MA: Allyn & Bacon.

Wlodkowski, R. J., & Ginsberg, M. B. (1995). *Diversity and motivation: Culturally responsive teaching*. San Francisco, CA: Jossey-Bass.



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