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Family and Consumer Sciences Research Journal

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**Special Issue: The Evolution of Research in
 Family and Consumer Sciences**

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The *Family and Consumer Sciences Research Journal* publishes original research and scholarly reviews in all areas of family and consumer sciences and related disciplines concerned with the general well-being of families and individuals, including such areas as child and family studies; clothing and textiles; consumer sciences education; family economics and management; food and nutrition; and housing, equipment, and design.

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Reflections on Family and Consumer Sciences Research at the End of the Millennium: An Introduction and Editorial Note

Whether you believe that the year 2000 or 2001 represents the *real* end of the millennium, such a milestone seems an appropriate time for taking stock of the evolution and status of research in the field of family and consumer sciences. This issue of the *Family and Consumer Sciences Research Journal* contains a collection of refereed articles that highlight major trends and accomplishments to date in six broad areas of inquiry: textiles and clothing; food, nutrition, and health; family studies; consumer sciences, including family, consumer, and consumption economics; housing, equipment, and design; and family and consumer sciences education. Although the articles differ somewhat in scope and approach, each gives attention to important topical, methodological, and epistemological trends and points out future needs and challenges, some of which bear remarkable similarity to those identified in the last comprehensive review of research published in this journal in March 1984. The issue concludes with an overview and listing of theses and dissertations completed in 2000.

On a positive note, several of the authors conclude that family and consumer sciences research has grown in sophistication both theoretically and methodologically. Moreover, although it appears that the positivist perspective still dominates the field's inquiry, the authors also report that there is an openness and movement toward use of alternative epistemological lenses to inform problem identification and investigation. The body of literature that now exists contains a rich and impressive base of knowledge that is directly applicable to improving the well-being of individuals, families, and communities.

As the articles so aptly point out, however, there is still much work to be done to maximize knowledge production in family and consumer sciences and to facilitate the application of this knowledge to policy and practice. Although researchers are proactive in identifying emergent issues for families and the profession, they face continued barriers in securing funding and other resources needed to address

them. And, even though the research is growing in sophistication, three other problems also persist: bringing cohesion to the research within and across subject-matter lines, gaining greater visibility for the research outside the field, and relating the research directly to public policy formation.

New knowledge has the potential to strengthen the profession and the quality of life of families, individuals, and communities. However, that can happen only if the research base is explicitly linked to strategic planning, policy formation, and professional development activities. Though these are not new ideas, as we enter a new millennium, it seems worth pointing out that there is still a need to increase the attention on these issues.

Wendy L. Way
Editor

Research Trends in Textiles and Clothing: An Analysis of Three Journals, 1980-1999

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The purpose of this research was to assess trends in research, research strategies, data analysis techniques, funding sources, affiliations, and the use of theoretical frameworks in textiles and clothing research. Empirical research focused on textiles and clothing and published in three home economics-related journals—Journal of Family and Consumer Sciences, Family and Consumer Science Research Journal, and Clothing and Textiles Research Journal—from 1980 to 1999 was content analyzed (N = 586). Although survey methodology and experimentation were the first and second most-used research strategies in all but one 5-year period from 1980 to 1999, fieldwork has increased. Data analysis techniques were primarily quantitative, with increases in the use of some advanced statistical techniques. However, the qualitative treatment of data also increased. Suggestions for graduate education and faculty development are offered.

The end of the millennium is a good time to assess research trends in a discipline. In so doing, we might reflect on past accomplishments, analyze the current state of research, and strategize for the future. Research is important to a profession (Goldsmith, 1983; Ritchey, Lovingood, & Sweat, 1985; Thompson, Werden, & Stedman, 1956) and a measure of that importance is the fact that scholarly journals are established by professional associations to promote scholarship and scholarly exchange, a stronger research base in the profession, and the development of theory.

In the early 1980s, the *Home Economics Research Journal (HERJ)* put forth a call for articles to assess the state of research in home economics. In March 1984, that journal published 13 state-of-the-art articles, each addressing the state of research in an area of home economics. Three of those articles focused on research topics of interest to

researchers in textiles and clothing (Daly, 1984; Davis, 1984; Hutton, 1984). This article follows in that same tradition by focusing on trends in textiles and clothing research subsequent to the topics covered by the 1984 articles. We focused on research published in three major home economics–related journals in the 20-year period from 1980 to 1999: *Journal of Family and Consumer Sciences* (JFCS, formerly *Journal of Home Economics* [JHE]), *Family and Consumer Sciences Research Journal* (FCSRJ, formerly *Home Economics Research Journal*), and *Clothing and Textiles Research Journal* (CTRJ).

The purpose of our research was to assess trends in research topics, research strategies, data analysis techniques, funding, use of theoretical frameworks, and hypotheses in textiles and clothing research. Specifically, we were interested in answering the following questions with respect to textiles and clothing research:

- What topics were most frequently under investigation?
- What research strategies were being used?
- What data analysis techniques were employed?
- Were textiles and clothing researchers being funded and were funding sources internal or external to the researchers' institution?
- Were researchers using hypotheses to guide their research?
- Were researchers using theory or theoretical frameworks to guide their research?

LITERATURE REVIEW

Textiles and clothing research has its roots within the profession of home economics and has long been considered an appropriate subject matter specialization by home economists (Anspach, 1959; Chowdhary & Meacham, 1983-1984; Joseph, 1982; Thompson et al., 1956). In fact, Chowdhary and Meacham (1983-1984) noted that "textiles and clothing has been recognized as one body of subject matter within home economics since the founding of home economics" (p. 15). In addition, the Association of College Professors of Textiles and Clothing (ACPTC), now called the International Textile and Apparel Association, grew out of a professional association of home economists, the American Home Economics Association (AHEA), now called the American Association of Family and Consumer Sciences (AAFCS). Joseph (1982) noted the close working relationship between ACPTC and AHEA.

In the early 1950s, ACPTC was a constituent group of AHEA, and membership in ACPTC was restricted to those individuals who held membership in AHEA (Joseph, 1982). As a result, it was natural for textiles and clothing faculty to publish their work in the primary journals of AHEA: *JFCS* and *FCSRJ*. ACPTC separated from AHEA in 1978, opened membership to nonmembers of AHEA, and subsequently launched its own journal *CTRJ* in 1982 (Joseph, 1982). Over the years other publications have been launched¹ that attract authors from specializations within textiles and clothing (e.g., *Dress, Journal of Fashion Marketing and Management, Journal of the Textile Institute, and Fashion Theory: The Journal of Dress, Body, and Culture*).

However, for this analysis we focused on *JFCS*, *FCSRJ*, and *CTRJ* because of their history as publication outlets for home economists and because they are inclusive sites for the publication of textiles and clothing research. Goldsmith (1983) provides evidence that *FCSRJ* has been a publication outlet for textiles and clothing research through her analysis of articles published in *HERJ* from 1972 to 1980. She sampled articles from 3 years and found more articles focused on textiles and clothing content than any other home economics subject matter. She also identified the most prolific authors. Three of the top four authors were textiles and clothing scholars. Together these results suggest that *HERJ* has a history as a publication outlet for textiles and clothing researchers.

The three journals (*JFCS*, *FCSRJ*, and *CTRJ*) were our focus because they continue to publish articles from all specialization areas within textiles and clothing. Additionally, they have been content analyzed by other researchers interested in research trends and productivity in textiles and clothing research (Chowdhary & Meacham, 1983-1984; Lakner, Paff, & Din, 1997; Oliver & Mahoney, 1991), allowing us to build on existing published research. Finally, Laughlin and Kean (1996), in their investigation of U.S. textiles and clothing programs and faculty, found that *CTRJ* was the most frequent publication venue in the field, followed by *FCSRJ*, underscoring their importance as publication sites for textiles and clothing research.

Topics of Research

As indicated, several researchers have completed analyses of textiles and clothing research. One aspect of research they consistently took note of was subject matter area. Anspach (1959) analyzed the research focusing on clothing contained in *JHE* from 1925 to 1958,

doctoral dissertations from 1948 to 1958, and all such research reported in bulletins published by the U.S. Department of Agriculture (USDA). She identified 1925 as her starting point because that year the Bureau of Home Economics organized a division of textiles and clothing. Her sample was a total of 210 studies published between 1925 and 1958. She categorized the research into six areas: design (36% of total), selection (22%), economics and management (16%), home sewing (13%), market policies (9%), and maintenance (4%). The design category was broadly defined and included functional aspects of dress (e.g., durability/service); social psychological aspects of dress, comfort, and health as related to dress; and aesthetics of dress.

Chowdhary and Meacham (1983-1984) took a broader approach and analyzed all articles dealing with either textiles or clothing published within the home economics discipline. Their purpose was to investigate the visibility of textiles and clothing within home economics and, to do so, they categorized and counted the number of textiles and clothing-related articles published in *JHE* (1911-1980) and *HERJ* (1972-1980). The types of articles analyzed included general articles, research briefs, research articles, and abstracts. They classified textiles and clothing articles by subject matter emphasis and assessed visibility by counting the number of articles classified within each. They identified 2,274 textiles and clothing articles during this 70-year period. The rank ordering of the subject matter areas by number of articles in each area revealed that research articles on textiles were most numerous, accounting for more than half of the identified articles (51.4%). Consumerism was ranked second (22.1%) followed by historical textiles and costume (9.8%), sociological and psychological aspects of clothing and textiles (8.6%), and clothing construction (8.1%). The findings from this research and others (Goldsmith, 1983; Ritchey et al., 1985) demonstrate that at least until the early 1980s, home economics journals were an important publication site for textiles and clothing articles.

In 1982, *CTRJ* was established (Joseph, 1982), and by 1991-1992, it was the most frequent publication site for U.S. textiles and clothing researchers (Laughlin & Kean, 1996). Focusing only on *CTRJ*, Oliver and Mahoney (1991) examined articles published in the first seven volumes to determine publication trends. Articles were classified as empirical, editorial, or theoretical. One hundred nineteen of the 145 articles published within the first seven volumes represented empirical research (82%). The ranking of the empirical articles by subject matter indicated that 26% focused on social psychological aspects of

dress, 20% focused on consumer issues, 15% investigated textile science, 13% represented historical or cultural research, 12% addressed educational issues, 8% investigated issues related to merchandising, and 6% represented design research.

Unfortunately for our purpose, the nature of these three research studies is such that comparison is difficult. Oliver and Mahoney (1991), in their analysis of *CTRJ*, analyzed all published articles but classified them by type (empirical, theoretical, editorial); the empirical articles were also classified by subject matter. Anspach (1959) only analyzed clothing research, whereas Oliver and Mahoney (1991) analyzed clothing research in addition to textile research. Although Chowdhary and Meacham (1983-1984) focused on articles with both textiles and clothing content, they analyzed general articles in addition to research articles, and no breakdown was given of the empirical articles by content category. On the other hand, both Oliver and Mahoney (1991) and Chowdhary and Meacham (1983-1984) analyzed journal articles only, whereas Anspach also analyzed USDA bulletins and dissertations. To tenuously summarize from these very different studies, it appears that textile research may be less represented in home economics-related journals than in the past, although research focusing on social psychological aspects of dress and consumer issues have increased their visibility over time.

Research Strategies

Strategies used by researchers are important to study because they are directly related to what the research can tell us (Lennon & Burns, 2000) and because any one strategy or research approach may be inadequate (Hamilton, 1993a). The type of data that can be collected, the type of possible analyses, and even the types of implications that can be drawn are all directly related to research strategies.² As a result, research strategies are important to the development of an empirical body of knowledge (Sybers & Roach, 1962) and, indeed, shape what is known.

Kang-Park and Sieben (1993) investigated the strategies used by researchers who focused their research on the social psychological aspects of dress. They used the *Clothing and Textile Arts Index* (Hutton, 1980, 1985, 1986) to identify sources both inside and outside home economics. The final sample consisted of 318 articles from 21 publication sources (i.e., psychology-related journals, marketing-related journals, and home economics-related journals). Of those articles

published in home economics–related journals, 74.7% used survey as their research strategy, and 20.5% used experimentation.

With a somewhat different focus, Lennon, Burns, and Rowold (1995) analyzed the strategies used by researchers in textiles and clothing in 224 studies that involved human participants. Their sample included all such articles that had been published in two home economics–related journals (*HERJ* and *CTRJ*) from the first issue of each through the last issue of 1990. The most common strategy used by researchers using human participants was survey methodology (63.4%), followed by experimentation (33.5%). Summarizing from both Kang-Park and Sieben (1993) and Lennon et al. (1995), it appears that whether focusing on a broad range of home economics–related journals or on only two, the two primary research strategies used by researchers studying dress and human behavior have been survey methodology and experimentation. In terms of subject matter, a limitation of the research by both Kang-Park and Sieben (1993) and Lennon et al. (1995) is their rather narrow content focus.

Data Analysis Techniques

A few researchers have assessed data analysis techniques in their investigations of published research (Hutton, 1984; Kang-Park & Sieben, 1993) or commented on such techniques in literature reviews (Lowe, 1993). In her study of the state of clothing and human behavior research, Hutton (1984) made the observation that the use of sophisticated statistical techniques increased over time. Lowe (1993) made a similar evaluation after reviewing quantitative analyses of fashion change. Although not all researchers use advanced statistical techniques in their research, an analysis of the common statistical techniques used in journals of a discipline does provide a basis for recommendations for graduate education and for faculty development (Kang-Park & Sieben, 1993).

With those two potential uses of the information in mind, Kang-Park and Sieben (1993) identified major statistical techniques used by authors. They grouped statistics into four categories: basic, intermediate, advanced, and a fourth group of infrequently used statistical procedures including nonparametric procedures.³ Within the home economics–related journals across the span of years analyzed, basic techniques predominated (48.3%), intermediate techniques were used in 23.3% of the studies, and advanced techniques were found in 8.9% of them. The authors also presented the data in 3-year

increments. In comparing the first 3 years to the last 3 years, our examination of their data suggested a decrease in the use of basic techniques (66.7% vs. 36.2%) and increases in the use of both intermediate (22.2% vs. 32.4%) and advanced techniques (0% vs. 11.4%).

Funding Sources

Research support enables scholars to be productive. Support in the form of funding is particularly important. In her analysis of clothing and human behavior research published in a variety of sources, Hutton (1984) found that of the total number of textiles and clothing authors identified, only 42% were funded. Extrapolating from her statistics, of those textiles and clothing authors with funded projects, nearly 83% received funding from an agricultural experiment station (AES). In making that determination, she counted as funded any article that listed an AES project even if the author did not explicitly indicate that the project was funded. Because AES appointments and funds are administered in a variety of ways, and because no-salary appointments are sometimes possible, it is possible that the number of articles funded by AES was overcounted. In other research, Oliver and Mahoney (1991) also noted funding sources in their analysis of *CTRJ*. They found that sources of funding were identified in 37 of the 145 articles analyzed. Agricultural experiment stations were listed as the most frequent source of funding. To summarize, it appears that AES funding may be the most frequent source of monetary support for research published by textiles and clothing scholars. Because the possibility for AES funding is related to affiliation, this suggests that university affiliation is an important variable related to research funding and ultimately to research publication productivity.

Affiliations

In their analysis of *CTRJ*, Oliver and Mahoney (1991) also examined trends in author affiliations. Most authors were affiliated with higher education positions (only 14 listed non-higher education affiliations), and all authors came from the United States, New Zealand, or Canada. The researchers also found that 68% of authors were affiliated with 13 universities, 12 of which were land grant universities. In an attempt to identify scholars in clothing and textiles whose work had been significant in the advancement of the field, Lakner et al. (1997) performed a citation analysis of *CTRJ* and *HERJ* beginning

with their first issues and continuing through December 1993. Of the 52 authors who had been cited 25 or more times, 88% were affiliated with land grant schools. Thus, in terms of both authorship and authors of cited works, it appears that most of the authors of published textiles and clothing research in *CTRJ* and *HERJ* are affiliated with land grant institutions. When associated with an AES project, faculty may have the opportunity to compete for funds. But, even if not associated with an AES project, scholars from land grant institutions work in a context that emphasizes and rewards research and scholarly productivity. For example, land grant institutions typically include research as part of their missions, and as a result, research productivity tends to be rewarded in promotion and tenure decisions. In addition, university administrations may provide opportunities for faculty development, such as grant writing workshops or mentoring, which encourage research activity. Some of these kinds of efforts may not be supported on non-land grant campuses, or may not be supported to the extent that they are on land grant campuses.

Use of Theoretical Frameworks

Other researchers (McCullers, 1984; Winakor, 1982) have written about the importance of theory and the relationship between theory and publications by home economists. Winakor (1982) noted the dearth of publications in *HERJ* that addressed theoretical or methodological issues. McCullers (1984) assessed the use of theory in research by home economists out of concern that home economists had avoided using theory. He asserted that home economists did not develop or extend theory using new data, nor did they resolve theoretical questions. To rectify the situation, he urged greater involvement in theory by home economics researchers and suggested they clearly articulate their theoretical rationale and place their results in a theoretical context.

Since the early 1980s, researchers have also commented on the state of theory development in textiles and clothing (Hamilton, 1993a, 1993b; Lakner, 1993; Lowe, 1993; Winakor, 1987). Although most urge theoretical development, Hamilton (1993a) also reminded us of the limitations of theory because "how one identifies, orders, connects, and defines relevancy of and relationships between facts has to do with the theories or paradigms one holds" (p. 51). In another article, Hamilton (1993b) argued that although theory can order and connect

previously disconnected facts, it also provides a rigid template that can structure and restrict our thinking.

Hutton (1984) set out to evaluate the state of research in human behavior and clothing. A major interest was to assess how such research had contributed to theory development. She analyzed 243 research reports focused on clothing and behavior published in the 12-year period between January 1970 and December 1981. Hutton found that whereas 41.8% of the researchers explicitly stated a theoretical framework that guided their study, only 35% of the authors whose research she analyzed placed their findings within a theoretical context. Like McCullers (1984), Hutton (1984) urged authors to articulate their theoretical underpinnings and to ground their results in a theoretical context.

Kadolph and Scheller (1997) examined textile science research reports and analyzed a sample of 29 such articles from 1994 to 1995. They found that many of the articles articulated no particular theoretical basis. As Hutton (1984) had argued in the context of clothing and human behavior research, they argued that a theoretical framework is important in textile science research reports because it provides a context for an interpretation of the results. Kadolph and Scheller (1997) also found other critical elements lacking, including clear statements identifying independent and dependent variables, hypotheses, statistical procedures used, or research strategy employed.

Summarizing and Synthesizing Journal Analyses

In attempting to summarize and synthesize previous journal or research analyses, it became clear that a variety of differences in such articles made comparison difficult. Across such articles we found (a) differences in sources (e.g., abstracts, dissertations, journal articles of all types, empirical journal articles); (b) differences in variables to be analyzed; (c) differences in subject matter content; and (d) differences within sources (*HERJ* only, *CTRJ* only, home economics-related only, journals outside home economics). An analysis of empirical articles in home economics-related journals according to topics of interest in both textiles and clothing would both build on the existing knowledge base and allow for easier comparison. Our purpose in undertaking this research was descriptive. To assess trends in topics of research, research strategies, data analysis techniques, and use of theoretical frameworks and hypotheses in textiles and clothing research, we content analyzed three home economics-related journals.

METHOD

Sample

Articles published in *JFCS* and *FCSRJ* from 1980 through 1999 or in *CTRJ* from 1982 through 1999 were included in the sample if they focused on textiles and clothing subject matter and if they were full-length empirical articles. A total of 586 articles were identified for coding with 44 from *JFCS*, 155 from *FCSRJ*, and 387 from *CTRJ*. To assess preliminary reliability of the coding scheme, the first two authors initially coded one volume of *CTRJ*. Intercoder reliability was calculated by dividing the number of agreements by the number of agreements plus the number of disagreements. These initial reliabilities were greater than .75. One author coded *JFCS* and *FCSRJ*, and the other coded *CTRJ*.

Coding

To be able to identify trends in research, we reviewed research methods textbooks or other sources for definitions. Research strategies were coded as fieldwork, nonreactive, survey methodology, experimentation, or a combination of any of these (Lennon & Burns, 2000). Fieldwork included research that studied existing relationships and situations of people in their daily lives for which there was no attempt to influence or manipulate variables. Research was coded as nonreactive if the researchers studied situations where remains of behavior, artifacts, media (e.g., documents, advertisements), or previously collected data were analyzed. This category included historic research, content analysis, and secondary analysis of survey or other data. Research was coded as experimental if it involved producing a manipulation of an independent variable(s) and observing its effect on dependent variable(s). Laboratory experiments, field experiments, and ex post facto research were included in this category. Research was classified as survey research if it used a questionnaire or interview schedule as a primary data collection tool rather than as an adjunct to another strategy such as fieldwork.

Following Lennon and Burns (2000), data sources were coded as individual, interindividual, and social/cultural. Another category, product, was also added. Typical products studied were textiles and yarns. Private documents such as letters were classified as individual

data, whereas public documents (e.g., television shows, Sears catalogs, or fashion advertisements) were classified as social/cultural data.

Research topics were classified as textile science, social psychological aspects of dress (including fashion), cultural, historic (both costume and textiles), aesthetics/design (including textile design, illustration), construction, consumer behavior, retail/production/trade (focus on retailers, manufacturers, trade legislation), education (teaching methods, techniques, student learning, curriculum), clothing/textile care or maintenance, and empirical journal analyses. Institutional affiliation of the first author was also coded using the categories of high school, private college or university, public college or university (non-land grant), land grant university, state or federal government, international college or university, corporate affiliation, and no affiliation stated.

If a funding source was indicated, it was coded as internal funding, external funding, or both. Whether the research was guided by a theoretical perspective was also coded. In making this determination, we only coded for a theoretical perspective if one was specifically stated. Likewise, whether specific hypotheses, research questions, or predictions were articulated was also coded. Finally, specific statistical procedures were coded. These included descriptive statistics; reliability; correlation or simple regression; *t* tests or one-way analysis of variance; factorial analysis of variance; partial correlation, semipartial correlation, or analysis of covariance; multivariate analysis of variance or covariance; factor analysis; multiple regression; discriminant analysis; logistic regression; path analysis; structural equation modeling or confirmatory factor analysis; cluster analysis or multidimensional scaling; qualitative analyses; nonparametric analyses; cell comparisons; and other statistical techniques (i.e., seriation, Engle curve analysis, Markov analysis, or Tobit analysis).

RESULTS AND DISCUSSION

Reliability of Coding

To determine reliability, 172 articles were coded by both of the first two authors. Each of these researchers coded at least 22% of the articles from each of the three journals. As in the initial reliability analysis, intercoder reliability was calculated by dividing the number of

agreements by the number of agreements plus the number of disagreements. All reliabilities were deemed acceptable (.77 to 1.00).

Descriptive Analyses

The topic studied most often in these studies was social psychological aspects of dress ($f = 161$ or 27.4%), closely followed by consumer behavior ($f = 145$ or 24.7%). The third most frequently studied topic was retail/production/trade ($f = 64$ or 10.9%), followed by textile science ($f = 56$ or 9.6%) and historic costume and textiles ($f = 51$ or 8.7%). Educational topics (including teaching methods and techniques, student learning, and curriculum) were the focus of the research for 39 (6.6%) articles. Thirty-three articles (5.6%) addressed the topic of aesthetics and design, 17 (2.9%) focused on construction, 14 (2.4%) addressed cultural aspects of dress, and 6 (1%) were empirical journal analyses. These results are consistent with those of Lakner et al. (1997), who found that the most-cited authors published in the social psychology or cultural area, and with those of Oliver and Mahoney (1991), who found that the largest percentage of the articles they analyzed represented social-psychological subject matter. Thus, that social-psychological aspects of dress and consumer behavior continue to dominate as topic areas is consistent with our earlier summary observation.

The research strategy most frequently employed in these studies was survey methodology ($f = 279$ or 47%). Not surprisingly and consistent with the findings of other researchers, the second most frequently used research strategy was experimentation ($f = 186$ or 31.3%). One hundred studies (17.1%) employed nonreactive research, and 29 used fieldwork. Eight of the coded studies used more than one strategy. These results are consistent with those of Lennon et al. (1995) and of Kang-Park and Sieben (1993), who found that survey methodology followed by experimentation were the most frequently employed research strategies in studies of dress and human behavior.

Because multiple strategies were sometimes used and because it is common for some strategies to be associated with multiple data sources (e.g., fieldwork), the total number of data sources coded ($f = 625$) is greater than the number of articles coded ($f = 586$) and is greater than the number of strategies ($f = 594$). The most frequent data source was the individual ($f = 452$ or 72.3%), the second most frequent data source was social/cultural data ($f = 91$ or 14.6%), whereas the third

most frequent data source was a product ($f = 74$ or 11.8%). The least frequently used data source was interindividual data ($f = 8$ or 1.3%). That the most frequent data source was the individual is not surprising because it follows from the heavy use of survey methodology and experimentation. Perhaps the reliance on individual data can be also partially explained by the fact that the topics most frequently researched were social-psychological aspects of dress closely followed by consumer behavior; researchers in these areas typically model their work after research in psychology and marketing, two disciplines that tend to focus on the individual.

Data analyses were primarily quantitative. Across the 586 articles, 1,706 total analysis techniques were used ($M = 2.91$). Descriptive statistics ($f = 458$ or 78.2%) of some type were most frequently used in the coded studies. The second most frequently used analysis technique was factorial analysis of variance ($f = 201$ or 34.3%), followed by cell comparisons ($f = 137$ or 23.4%), and one-way analyses of variance and t tests ($f = 136$ or 23.2%). The data were treated qualitatively in 20.1% ($f = 118$) of the coded articles. Simple regression and correlation were used in 114 articles (19.5%), and a variety of nonparametric analyses were used in 108 coded articles (18.4%). Factor analysis was used in 17.4% ($f = 102$) of the articles, reliabilities were reported in 16.6% ($f = 97$) of the articles, and multivariate analysis of variance was used in 11.6% ($f = 68$) of the articles. Multiple regression was reported in 67 articles (11.4%). Other analysis techniques were used even less frequently. Cluster analysis and multidimensional scaling were used in 2.9% ($f = 17$) of the articles; partial correlation, semipartial correlation, or analysis of covariance was used in 2.7% ($f = 16$) of the articles; and discriminant function analysis was used in 2.2% ($f = 13$). Path analysis or structural equation modeling was used in eight (1.4%) of the articles. Other statistical techniques (e.g., seriation, Engle curve analysis, likelihood ratio, Markov analysis, and Tobit analysis) were used in 37 (6.3%) articles. Reliance on univariate and multivariate (factorial and one way) analysis of variance may be related to the fact that data gathered via both dominant strategies (survey methodology and experimentation) may be analyzed with those techniques.

In only 177 (30.2%) articles was a source of funding articulated by the authors. This percentage is closer to the 26% found by Oliver and Mahoney (1991) than to the 42% found by Hutton (1984). The most frequent source of support was internal funding ($f = 109$ or 61.6%) followed by external funding ($f = 40$ or 22.6%). A few authors received

both internal and external funding ($f = 28$ or 15.8%). The figure for internal funding is comparable to that found by Oliver and Mahoney (1991) and less than what can be extrapolated from Hutton (1984). Our figure for external funding is comparable to that found by Oliver and Mahoney (1991) and about three times what can be extrapolated from Hutton (1994). These comparisons are estimates because coding categories are somewhat different across the articles, and Oliver and Mahoney (1991) only reported percentages of funding relative to the total number of articles coded, rather than reporting frequencies for each category of funded research. That funding was most frequently from internal sources supports the findings of Hutton (1984) and Oliver and Mahoney (1991). Although we did not code for type of internal funding source, many of the authors indicated AES funding.

Most authors articulated higher education affiliations ($f = 574$ or 98%), but authors of two (0.3%) articles specified no affiliation. The most frequently cited affiliation was land grant university ($f = 417$ or 71.2%) followed by public, non-land grant university ($f = 121$ or 20.6%). Authors of 20 (3.4%) articles cited international college or university affiliations, and 16 (2.7%) cited private college or university affiliation. Other affiliations included corporations ($f = 8$ or 1.4%) and state or federal government agencies ($f = 2$ or 0.3%). These results are consistent with those of Lakner et al. (1997), who found that 85% of the most-cited authors were from land grant institutions, and those of Oliver and Mahoney (1991), who found that 68% of the articles they coded were affiliated with land grant institutions.

Theories or theoretical perspectives were cited in 224 (38.2%) of the coded articles. Of those 224 articles with explicit theoretical perspectives, 35.7% ($f = 80$) focused on social psychological aspects of dress, 30.4% ($f = 68$) addressed consumer behavior, and 14.7% ($f = 33$) dealt with retail, production, or trade issues. Educational issues were addressed in 4.9% ($f = 11$) of the articles having a theoretical perspective, followed by textile science (3.6%, $f = 8$) and cultural aspects of dress (3.6%, $f = 8$). Finally, of those articles with a theoretical perspective, 3.1% ($f = 7$) focused on aesthetics and design, 2.7% ($f = 6$) had a historic focus, 0.9% ($f = 2$) addressed construction, whereas 0.4% ($f = 1$) were journal analyses. These results are fairly consistent with those of Hutton (1984) for the overall percentage of articles that articulated a theoretical framework and with those of Kadolph and Scheller (1997) for the extent to which the textile science articles they analyzed specified a theoretical framework.

TABLE 1: Topics Over 5-Year Periods

<i>Topic</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>Total</i>
Textile science	8	18	13	17	56
Social/psychological	39	42	52	28	161
Cultural	1	2	2	9	14
Historic	9	8	22	12	51
Aesthetics/design	4	6	5	18	33
Construction	2	7	5	3	17
Consumer behavior	13	35	54	43	145
Retail/production/trade	1	13	29	21	64
Education	3	12	9	15	39
Journal analyses	2	0	1	3	6
Total	82	143	192	169	586

Assessment of Trends

To assess trends over the 20-year period from 1980 through 1999, we divided the period into 5-year increments (1980-1984, 1985-1989, 1990-1994, and 1995-1999). Due to empty cells or small cell sizes, chi-square analyses were not warranted, and we relied on descriptive analyses. Overall, more articles were published from 1990 through 1994 (see Table 1) than other periods. The number of articles with an aesthetics and design focus had clearly increased by the 1995-1999 period, as had the number of articles in cultural aspects of dress. In each of those instances, the number published in the last period is more than that in all the other periods combined. The numbers of articles with a social psychological focus, as well as those with an historic focus have declined in the most recent of the 5-year periods. This suggests that the increasing frequency of articles focusing on either the social psychological aspects of dress or historic textiles and dress identified by Chowdhary and Meacham (1983-1984) has not continued through the end of the millennium in the three journals coded.

In terms of trends in research strategies over the 20-year period, it is clear that in every period except the first period, survey methodology has been the strategy of choice for textiles and clothing researchers publishing in these three journals (see Table 2). It appears, however, that the use of fieldwork is increasing, particularly in the last 5-year period (1995-1999). In their analysis of research published between 1970 and 1985, Kang-Park and Sieben (1993) found that "other" research, that which used neither experimentation nor survey methodology, had increased in frequency. Kang-Park and Sieben's (1993)

TABLE 2: Research Strategies Over 5-Year Periods

<i>Research Strategy</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>Total</i>
Fieldwork	3	2	10	14	29
Nonreactive research	14	16	42	28	100
Survey methodology	26	68	90	95	279
Experimentation	40	58	53	35	186
Total	83	144	195	172	594*

NOTE: Because multiple strategies were sometimes used, the total number of strategies does not equal the total number of articles.

“other” category included what we have called nonreactive research as well as fieldwork. The results are not exactly comparable, but their findings are consistent with ours.

Comparing across the time periods, the numbers of articles reporting qualitative analyses have increased (see Table 3). Although actual numbers are small, the use of some sophisticated statistical techniques, such as structural equation modeling and path analysis, has increased over time. This is consistent with the findings of Kang-Park and Sieben (1993), who also found an increased number of articles that used sophisticated statistical techniques. Textiles and clothing researchers publishing in these three journals have often reported reliabilities, especially in the 1990s as compared to the 1980s. Although factorial analysis of variance remains a frequently reported technique in these articles, the number of articles reporting cell comparisons has surprisingly declined.

Approximately one third or fewer of the authors of the coded articles articulated funding sources: In the first time period, only 23 (28%) authors indicated funding sources; the most common funding source was internal funds (see Table 4). In the second and third time periods, 37 (26%) and 64 (33%) authors, respectively, indicated funding, and the most common source was internal funds. However, in the 1995-1999 period, 53 (31.4%) authors reported funding, and external funding was as common as internal funding. This may reflect the reality that universities are using baseline indicators such as external funding in faculty evaluations, thereby encouraging faculty to compete for external funds.

First-author affiliations appear to remain consistent across the 5-year periods (see Table 5). For each period, the most articles are published by authors affiliated with land grant universities, followed by

TABLE 3: Data Analysis Techniques Over 5-Year Periods

<i>Technique Type</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>Total</i>
Descriptive statistics	69	118	140	131	458
Reliability	11	15	35	36	97
Simple regression, correlation	22	31	32	29	114
One-way analysis of variance, <i>t</i> tests	27	35	42	32	136
Factorial analysis of variance	19	60	65	57	201
Partial, semipartial correlation, analysis of covariance	5	2	6	3	16
Factor analysis	7	33	39	23	102
Multivariate analysis of variance, covariance	3	10	24	31	68
Multiple regression	7	16	24	20	67
Discriminant function analysis	2	5	3	3	13
Logistic regression	0	2	3	4	9
Path analysis, structural equation modeling	0	1	0	7	8
Cluster analysis, multidimensional scaling	1	7	6	3	17
Qualitative analyses	10	21	44	43	118
Nonparametric analyses	21	29	31	27	108
Cell comparisons	17	38	53	29	137
Other statistical techniques (e.g., seriation, Engle curve analysis, likelihood ratio, Markov analysis, Tobit analysis)	4	9	13	11	37
Total	225	432	560	489	1706

authors affiliated with public non-land grant universities. Few articles were published in these three journals by authors with private college or university affiliations, government agency affiliations, international college or university affiliations, or corporate affiliations. To assess the extent to which institutional affiliation was

TABLE 4: Funding Sources Over 5-Year Periods

<i>Funding Source</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>Total</i>
None reported	59	106	128	116	409
Internal funding	21	28	45	15	109
External funding	2	5	12	21	40
Internal and external funding	0	4	7	17	28
Total	82	143	192	169	586

independent of research funding support in U.S. colleges and universities, we recoded funding to either funded or unfunded. Chi-square analysis revealed that funding and affiliation were not independent, $\chi^2(2) = 15.59, p < .0001$. Unsurprisingly, as compared with textiles and clothing researchers from private or public non-land grant universities, researchers from land grant universities were more likely to receive some type of research funding. This may be indicative of the fact that faculty in textiles and clothing programs from land grant universities have more resources available to them to aid their research (e.g., graduate students) and provide faculty development.

Theoretical perspectives were articulated in 25 (30%) published articles in the first time period, 61 (43%) in the second time period, 77 (40%) in the third time period, and 61 (36%) in the last time period (see Table 6). Finally, hypotheses, research questions, or predictions were stated in 30 (37%) articles published in the first time period and in 46 (32%) articles published in the second time period. Hypotheses, research questions, or predictions were articulated in 65 (34%) articles published in the third time period and in 54 (32%) articles published in the fourth time period. Thus, the percentages have remained relatively constant. It should also be noted that it is not always normative or desirable to cite theoretical frameworks or hypotheses (research questions or predictions) when employing each of the four types of research strategies.

IMPLICATIONS

This research has implications for both graduate education and faculty development. The exact reason that textiles and clothing researchers have continued to use survey methodology and experimentation is unknown. It may be an artifact of what has been taught

TABLE 5: First-Author's Affiliations Over 5-Year Periods

<i>First-Author's Affiliation</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>Total</i>
Private college or university	3	2	8	3	16
Public (non-land grant) university	8	30	47	36	121
Land grant university	68	106	128	115	417
State, federal, or government agency	0	0	0	2	2
International college or university	2	2	7	9	20
Corporation	1	3	2	2	8
No affiliation stated	0	0	0	2	2
Total	82	143	192	169	586

TABLE 6: Use of Theoretical Frameworks and Hypotheses Over 5-Year Periods

<i>Method</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>Total</i>
Theoretical framework stated	25	61	77	61	224
Hypotheses, research questions, or predictions stated	30	46	65	54	195
Total number of articles published	82	143	192	169	586

in methods courses. However, with the continued reliance on the identified strategies, students need a thorough understanding of these techniques in order to read and evaluate much of the textiles and clothing literature. We also recommend that all four research strategies be covered in research methods courses for students in textiles and clothing programs. Competence in several of the research strategies will also allow researchers and future researchers (i.e., graduate students) to triangulate and increase their confidence in their findings.

In addition to having familiarity with research strategies commonly used in the field, students need knowledge of statistical tools and techniques. Our findings suggest that knowledge of statistics beyond basic levels will continue to be required in the future. It

appears that in addition to basic statistics (e.g., chi-square, *t* tests, correlation), students need an understanding of factorial analysis of variance, multivariate analysis of variance, multiple regression, and factor analysis as basic statistical knowledge. Both faculty and doctoral students may wish to increase their knowledge of some of the fairly recent statistical techniques, such as structural equation modeling. In addition, with the increases in the use of qualitative data analysis techniques, we recommend that students also have a basic understanding of these approaches. This knowledge will be useful to correctly interpret and use the research findings of others. Because the qualitative treatment of data is increasing, we recommend that faculty members gain a basic understanding of qualitative methods as well.

Although few of the authors cited funding sources, it is noteworthy that in the last 5-year period analyzed, external funding sources listed exceeded internal funding sources, indicating that textiles and clothing researchers are experiencing success at obtaining external grants. It is our experience that the ability to obtain funding, both internal and external, for research and teaching is a critical component of the ongoing success of faculty members regardless of their institutional affiliation. For current and future faculty, attention must be given to developing and maintaining skills in grant writing. If graduate programs do not already have a course or courses focused on grant writing, we encourage our colleagues to consider offering one as well as participating in grant writing workshops as part of their ongoing faculty development.

Although the use of theoretical frameworks to guide the development of research has increased since the 1980s, we echo the concerns of McCullers (1984) and Winakor (1982) about the importance of theory in the development of the field. We suggest that researchers articulate their theoretical underpinnings if appropriate because research that is disconnected can be interpreted as meaningless. At the same time, it might be useful to bring multiple theoretical perspectives to bear on a particular phenomenon to encourage creative thinking. In considering these issues, researchers must balance the value provided by theory (e.g., explanation and prediction) against its limitations (i.e., the possibility of limited perspectives) (Hamilton, 1993a, 1993b; Lennon & Burns, 2000).

Finally, like Kadolph and Scheller (1997), we urge researchers to think about how their published research articles are used by graduate students and other scholars. Those authors found that in textile

science reports, researchers did not always articulate essential elements of the research. In coding these data, we found that these elements were also often missing across all topical areas in textiles and clothing. For us, coding was made onerous because authors left out critical information or were unclear. When graduate students are reading clothing and textile literature and trying to make sense of it, their task is difficult when authors neglect to report important information. Based on our experience with this coding and in the spirit of providing needed information, we suggest that researchers include the following elements in their articles: research purpose, hypotheses, theoretical framework, analysis procedures used, a statement of the research strategy used, and source of funding.

SUGGESTIONS FOR FUTURE RESEARCH

In general, several microanalyses would be illuminating. Although we coded topics into 11 different content areas, it would be useful to conduct an exhaustive analysis of topics (e.g., social psychological aspects of dress could be divided into impression management, clothing attitudes, body image, dress codes, and so on). Likewise, knowing which theories were used, rather than if theories were used, would provide information on theoretical influence and theory usefulness. Finally, an analysis of specific funding sources would provide information on what has helped sustain research in clothing and textiles and provide ideas for where to seek future funding.

NOTES

1. *Dress* began publishing in 1975, and the *Journal of Fashion Marketing and Management* began publishing in 1996. Although the *Journal of the Textile Institute* began publishing in 1910, in 1996 it began publishing three parts: fiber science and textile technology; textile economics, management, and marketing; and global marketing of textiles. *Fashion Theory: The Journal of Dress, Body and Culture* began publication in 1997.

2. For example, to study clothing ads in *Vogue* magazine over the last 50 years, we probably would not use survey methodology.

3. Kang-Park and Sieben (1993) considered these statistical techniques to be at a basic level: descriptive statistics, Pearson product-moment correlation, chi-square, *t* test, and one-way analysis of variance. Intermediate techniques were factorial analysis of variance, analysis of covariance, planned orthogonal comparisons, post-hoc multiple comparisons, partial correlation, and multiple regression. Advanced level techniques were discriminate analysis, factor analysis, cluster analysis, and multivariate

analysis of variance/covariance. The other category included other correlations, other nonparametric statistical techniques, tests of reliability, tests of validity, and miscellaneous techniques.

REFERENCES

- Anspach, K. (1959). Clothing research in home economics, 1925-1958. *Journal of Home Economics*, 51(9), 767-770.
- Chowdhary, U., & Meacham, E. (1983-1984). Changing focus of textiles and clothing within home economics: An analysis of two professional journals. *Clothing and Textiles Research Journal*, 2(1), 15-18.
- Daly, M. C. (1984). Use of the ethnographic approach as interpretive science within the field of home economics: Textiles and clothing as an example. *Home Economics Research Journal*, 12(3), 354-362.
- Davis, L. L. (1984). Clothing and human behavior: A review. *Home Economics Research Journal*, 12(3), 325-339.
- Goldsmith, E. B. (1983). An empirical analysis of the Home Economics Research Journal. *Home Economics Research Journal*, 11(3), 207-213.
- Hamilton, J. A. (1993a). Dress and the dynamics of culture: Implications for theory, method, and content. In S. J. Lennon & L. D. Burns (Eds.), *Social science aspects of dress: New directions* (pp. 48-56). Monument, CO: International Textile and Apparel Association.
- Hamilton, J. A. (1993b). Social life and dress: Culture, context, complexity. In S. J. Lennon and L. D. Burns (Eds.), *Social science aspects of dress: New directions* (pp. 57-67). Monument, CO: International Textile and Apparel Association.
- Hutton, S. S. (1980). *The clothing index: An index to periodical literature, January 1970-December 1979*. Lincoln, NE: University of Nebraska.
- Hutton, S. S. (1984). State of the art: Clothing as a form of human behavior. *Home Economics Research Journal*, 12(3), 340-353.
- Hutton, S. S. (1985). *The clothing and textile arts index: An index to periodical literature, 1980-1984*. Fort Collins, CO: Colorado State University.
- Hutton, S. S. (1986). *The clothing and textile arts index: An index to periodical literature*. Fort Collins, CO: Colorado State University.
- Joseph, M. (1982). History and background of ACPTC. *Clothing and Textiles Research Journal*, 1(1), 31-33.
- Kadolph, S. J., & Scheller, H. P. (1997). Managing variation in textile science abstracts and reports through a comprehensive format and generic structure. *Clothing and Textiles Research Journal*, 15(3), 141-146.
- Kang-Park, J., & Sieben, W. (1993). Research methods and statistical techniques in articles on social psychological aspects of clothing, 1970-1985. In S. J. Lennon, & L. D. Burns (Eds.), *Social science aspects of dress: New directions* (pp. 185-196). Monument, CO: International Textile and Apparel Association.
- Lakner, H. B. (1993). Theoretical themes in the social science aspects of dress. In S. J. Lennon & L. D. Burns (Eds.), *Social Science Aspects of Dress: New Directions* (pp. 131-135). Monument, CO: International Textile and Apparel Association.
- Lakner, H. B., Paff, J. L., & Din, H. M. (1997). Most cited authors in textile and apparel-related articles published in the *Clothing and Textiles Research Journal* and

- the Home Economics Research Journal. *Clothing and Textiles Research Journal*, 15(4), 216-222.
- Laughlin, J., & Kean, R. (1996). Assessment of textiles and clothing academic programs in the United States. Part II: Unit characteristics and faculty. *Clothing and Textiles Research Journal*, 14(2), 145-160.
- Lennon, S. J., & Burns, L. D. (2000). Diversity of research in textiles, clothing, and human behavior: The relationship between what we know and how we know. *Clothing and Textiles Research Journal*, 18(4), 213-226.
- Lennon, S. J., Burns, L. D., & Rowold, K. L. (1995). Dress and human behavior research: Sampling, subjects, and consequences for statistics. *Clothing and Textiles Research Journal*, 13(4), 262-272.
- Lowe, E. D. (1993). Quantitative analysis of fashion change: A critical review. *Home Economics Research Journal*, 21(3), 280-306.
- McCullers, J. C. (1984). The role of theory in research: Implications for home economics. *Home Economics Research Journal*, 12(4), 523-538.
- Oliver, B., & Mahoney, M. (1991). The Clothing and Textiles Research Journal: An empirical examination. *Clothing and Textiles Research Journal*, 9(3), 22-27.
- Ritchey, S. J., Lovingood, R., & Sweat, S. (1985). Research in Home Economics: Progress and pitfalls. *Journal of Home Economics*, 77(2), 33-35, 55.
- Sybers, R., & Roach, M. E. (1962). Clothing and human behavior. *Journal of Home Economics*, 54(3), 184-187.
- Thompson, H. M., Werden, J., & Stedman, L. A. (1956). Planning ahead in textiles and clothing. *Journal of Home Economics*, 48(6), 409-413.
- Winakor, G. (1982). Home Economics Research Journal: Early years as editor. *Home Economics Research Journal*, 10(3), 307-310.
- Winakor, G. (1987). Research in fashion merchandising-The need for a theoretical base. *Clothing and Textiles Research Journal*, 7(1), 31-35.

The Evolution of Research in Family and Consumer Sciences: Food, Nutrition, and Health

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Changing perspectives in food, nutrition, and health are bringing new research opportunities. Knowledge that nutrients and other food substances prevent chronic disease expanded the study of dietary requirements beyond merely obviating deficiency. Government policy makers mandate food guidance programs to enable consumers to choose foods that are culturally appropriate yet support health. Intervention strategies leading to suitable food behavior are needed to address the rising health costs associated with aging and chronic diseases. Functional foods carrying added health benefits have gripped the attention of food producers and consumers, yet much is to be learned regarding long term effects. FCS professionals are uniquely qualified to study not only the theoretical bases of these issues but also their impact on the physical and psychosocial well-being of families. Research methods and applications must be incorporated at all academic levels to prepare FCS professionals to meet the research opportunities and challenges ahead.

Since the last research reviews in family and consumer sciences (FCS) were published in 1984, perspectives on foods, nutrition, and health have changed for FCS and other health professionals, food manufacturers, policy makers at all levels of government, and individuals and families. Over the intervening years, consumers have come to depend on the microwave oven for meal preparation and give special attention to foods labeled with specific nutritional effects. The fight against emerging pathogens associated with foodborne illness and maintenance of a safe and wholesome food supply led to the development of the Hazard Analysis Critical Control Points (HACCP) procedure, now implemented at all levels of the food chain. Policy makers, faced with escalating health care costs, which are fueled in part by the growth of the aging population, are looking for new ways to encourage positive food and lifestyle patterns that will promote health and delay the development of chronic disease and disability. The Internet has become an important tool for food and nutrition

education of both consumers and professionals, but at the same time, it is a source of misinformation and unregulated advertising for nutrition supplements and related products.

Over the years, research has expanded our understanding of nutrition science and the relationship between food and health. Advances in food science have contributed to increased availability of safe, wholesome, and convenient food in the marketplace. The work of behavioral scientists helped us recognize factors and attitudes that underlie the food choices of individuals and families and provided insight for the development of strategies for behavior change. Increasing government attention to nutrition surveillance, nutrition labeling, and outcome-based evaluation of federally funded food and nutrition programs has led to new initiatives in public policy for foods, nutrition, and health. These rapid and comprehensive changes have presented both challenges and opportunities for FCS professionals in business, government, education, and research. This review has been developed with the following goals:

1. to recognize the contributions of FCS researchers to the published work that has expanded our knowledge of foods, nutrition, and health;
2. to address published research in foods, nutrition, and health that has and will continue to significantly impact the food availability, food intake, and health of individuals and families and thus is of importance to FCS professionals; and
3. to suggest current research needs in foods, nutrition, and health to which FCS professionals bring a unique set of knowledge and skills and can make important contributions.

METHOD

Research for the development of this review began with the two journals supported by the American Association of Family and Consumer Sciences, the *Journal of Family and Consumer Sciences* and the *Family and Consumer Sciences Research Journal*. The author reviewed all issues of each journal from 1985 through July 2000. All articles in the broad categories of foods (food nutrient content, preparation, purchasing, or safety issues), nutrition (nutrient intake and requirements, nutrition intervention), and health (health education, fitness, and disease) were noted for further evaluation. During this time, 92 articles in these categories were published in the *Journal of Family and*

Consumer Sciences (and former *Journal of Home Economics*). This included 21 articles relating to foods, 35 articles relating to nutrition, and 36 articles relating to health. The *Family and Consumer Sciences Research Journal* (and former *Home Economics Research Journal*) published 80 articles on food, nutrition, and health, with 36 pertaining to foods, 23 pertaining to nutrition, and 21 pertaining to health. It is interesting to note that nine of these articles appeared in the 1985 volume of the *Family and Consumer Sciences Research Journal*. Since that time, about three to four articles per year relating to these topics have appeared in each journal. The 172 articles published in the two journals were carefully evaluated, and all with a research focus were considered for inclusion in this review. The articles that were ultimately chosen to be included were considered to be representative of the topic to be addressed and demonstrated appropriate and accepted research methods and process that could be replicated by other workers. Articles presenting innovative ideas and applications with research potential with FCS audiences were often selected. It was interesting to find that for many topics, articles published 15 years ago were found to address themes that are still important today for follow-up or continuing development. Unfortunately, space limitations precluded reference to many excellent articles published over the years. Health-related articles focusing on insurance and economic issues were not reviewed because they will likely appear elsewhere in this issue.

As another step in data gathering, the author reviewed the nutrition and foods categories on the AGRICOLA (AGRICultural OnLine Access) database, the food, nutrition, and agriculture database of the National Agricultural Library maintained by the U.S. Department of Agriculture (USDA). The major topics of the last 15 years evident in that database were compared with the topics covered by research articles appearing in the FCS journals initially reviewed. When comparing the work of FCS researchers with the published work appearing in AGRICOLA, it became evident that in some areas but not others, the scope of FCS publications reflected the overall pattern of the general research community in foods and nutrition. FCS work in nutrition intervention and food behavior and consumer concerns regarding safety of the food supply paralleled the articles appearing in the general database. FCS journals published fewer articles relating to nutrient requirements and chronic disease relationships and functionality of food ingredients. Because the recent work relating to dietary standards and nutrient requirements forms the subject matter base for the

nutrition education and intervention programs that are at the core of FCS practice, a review of the Dietary Reference Intakes and related work has been included here. Areas in foods of interest to FCS researchers are also addressed. The articles reviewed in these sections were identified using AGRICOLA and Index Medicus, the database maintained by the National Library of Medicine. These databases were also used to seek articles from other journals that would complement and expand our FCS work.

Many reports and recent findings regarding federal food assistance and nutrition education programs such as the National School Lunch Program have not been published in refereed journals but appear on the Web sites of their respective government agency. The Web sites maintained by the USDA were reviewed carefully to identify materials that would support this review.

The research to follow is organized around four themes:

1. *Dietary standards and nutrient requirements.* This section will review the Dietary Reference Intakes and the philosophy on which they were developed. Important advances in our knowledge of the nutrients and their functions will also be included.
2. *Nutrition and public policy.* This section will consider the research foundation used in the development of materials to provide food guidance to the general public such as the Food Guide Pyramid (FGP) and the Nutrition Facts Panel on the food label. Recent assessments of food assistance programs under the management of the USDA will be reported here.
3. *Food behavior and nutrition intervention.* Research focusing on food and nutrition behavior and nutrition education strategies to bring about changes in food and nutrition behavior will be addressed in this section.
4. *Food product development and food safety.* Published work focusing on new concepts in food products and processing that impact health, as well as emerging pathogens of concern to food safety will be included here.

DIETARY STANDARDS AND NUTRIENT REQUIREMENTS

Throughout much of the past century, research on human nutrient needs was directed toward the eradication of deficiency diseases. Thus, human and animal studies evaluated the amounts of nutrients that were required to maintain appropriate body storage levels, prevent deficiency symptoms, and support general health. In recent years, new technologies and specialized equipment have allowed us

to explore the functions of nutrients at the cellular and molecular levels, including the gene itself. Conditions of overnutrition such as obesity (Coulston, 1998) or the abuse of nutrient supplements (Food and Nutrition Board [FNB], 1997) are now major public health concerns. At the same time, we continue to face the human costs associated with existing malnutrition among particular segments of the population, including many women, children, and elderly in the United States and worldwide.

Historical Perspective on Dietary Standards

The Recommended Dietary Allowances (RDA), first issued in 1943 (FNB, 1989), served as nutrition standards by which food and nutrition professionals could evaluate the nutritional adequacy of populations and make recommendations to policy makers regarding the sufficiency of the food supply. Since 1943, a new set of RDAs was issued every 5 years to reflect new knowledge, with the last general update for all known nutrients issued in 1989. From 1943 through 1989, a new set of RDAs was issued every five years to reflect new knowledge, with the last general update for all known nutrients issued in 1989. From 1943 through 1989, a new set of RDAs was issued every five years to reflect new knowledge, with the last general update for all known nutrients issued in 1989.

In the early 1990s, as committees of nutrition experts began to prepare the new set of recommendations, it became apparent that some differences of opinion existed among researchers as to the philosophy that should govern the development of the RDA. Increasing evidence from population studies suggested that individuals consuming greater amounts of certain foods and nutrients were less likely to develop chronic diseases such as heart disease or to die at earlier ages. Based on this work, some nutrition experts supported the idea that the RDA should reflect intake levels associated with optimum health and not merely the prevention of deficiency or maintenance of nutrient reserves (Mertz, 2000).

Research Base for New Dietary Standards

Many population studies evaluating the health benefits of particular nutrient supplements, food items, or food groups used epidemiologic methods. Epidemiologic studies related such characteristics as age, gender, race, ethnicity, food and nutrient intake, or

lifestyle to the incidence or prevalence of chronic disease conditions such as heart disease, cancer, stroke, hypertension, or obesity (National Research Council, 1989). This research base included both prospective and retrospective studies. The prospective studies collected socioeconomic, demographic, nutrition, and/or health data on healthy populations and followed them over the passage of years to see who developed the targeted condition. The retrospective studies examined these parameters in individuals diagnosed with the targeted condition and looked for associations between past behavior and health diagnosis (Monsen, 1992). Statistical measures known as odds ratios were used to express the likelihood of one individual developing a condition as compared with another individual with a higher or lower nutrient intake or different lifestyle pattern. The benefits of increased intakes of particular foods or nutrients were also evaluated using controlled human feeding studies. In these studies, individuals of a particular age, gender, race, ethnicity, or disease condition were fed specific levels of foods or nutrients and observed over periods of weeks or months (National Research Council, 1989).

Definition of New Dietary Standards

In the mid-1990s, reviews of these accumulated research findings led to a redefinition of our nutrient standards (Mertz, 2000). The general category that had been used as a dietary standard, the RDA, representing the amount of a nutrient believed to meet the needs of all healthy people, remains the designation used for those recommendations for which there is a significant body of supporting scientific evidence. A new category, the Adequate Intake (AI), was developed for use with those nutrients for which a higher daily intake appears to be justified based on a health need, but available research evidence is limited. An AI was developed for calcium and vitamin D based on the fact that higher intakes of these nutrients appear to increase bone mineral density and offer some protection against the development of osteoporosis in older men and women (FNB, 1997). To address potential vitamin or mineral toxicities resulting from the aggressive marketing of nutritional supplements to consumers of all ages, a third category, the Tolerable Upper Intake Level (UL) was developed. The UL offers guidance to nutrition educators advising individuals and groups regarding the highest intake of a nutrient considered safe. The RDA, AI, and UL are referred to collectively as the Dietary Reference Intakes (DRI).

Another major change in the dietary standards has been the definition of new age categories. In the 1989 and prior editions of the RDA (FNB, 1989), all persons above the age of 50 were grouped together. This grouping of all individuals age 51 and over did not recognize the changes in physiological function and health, and the related changes in nutrient needs, that continue to occur as people age. In light of the projected growth in the total population age 65 and over, and the particular gains projected for the group age 85 and older, it is important that we define the changes in nutrient requirements that occur in later life. To direct attention to this need, two categories have been established for aging individuals—one for those ages 51 to 70 and another for those ages 71 and older (FNB, 1997).

New Roles for Foods and Nutrients

In past years, identification of nutrient function was based on obvious clinical changes that occurred in humans and animal models with induced deficiencies. Studies measured the levels of nutrients, enzymes, or biochemical metabolites in blood or urine. The development of new and sensitive techniques falling under the broad umbrella of molecular biology has made possible the investigation of nutrient functions at the level of the gene and are helping us understand how nutrients work together to support health. The study of the genetic material in cells is enabling us to identify individuals at risk for particular nutritional problems, allowing new interventions that focus on prevention rather than treatment. A genetic variation known as *MTHFR 677*, identified in 10% (homozygous form) to 40% (heterozygous form) of the general population, results in impaired formation of enzymes that control the metabolism of the vitamin folate and may lead to an increased folate requirement (Rosenberg & Rosenberg, 1998).

Nutrition and Chronic Disease

Projected increases in the aging population and rising health care costs have directed the attention of researchers to the role of nutrients in prevention of disease. The Surgeon General's Report on Nutrition and Health issued in 1988 (U.S. Department of Health and Human Services [USDHHS], 1988) emphasized the need for the American people to adopt food and lifestyle patterns that would reduce their risk of heart disease, cancer, and stroke. The Surgeon General's

Report was followed in 1989 by a publication of the National Academy of Sciences titled *Diet and Health: Implications for Reducing Chronic Disease Risk* (National Research Council, 1989) that summarized all available evidence regarding the relationship between food and nutrient intake and chronic disease. These two documents sparked new attention on the study of nutrition and disease and the identification of foods and food components that would reduce heart disease, stroke, and contributing conditions such as obesity, hypertension, and diabetes mellitus. The diet and health report also gave special attention to dietary factors that might reduce risk or offer some protection against cancer. This set the stage for the concentrated efforts to elucidate diet–cancer relationships that have continued to the present. Another health risk identified in the diet and health document was osteoporosis and bone loss. Pertinent research findings relating to each of these conditions are described below.

Cardiovascular Disease

Through the 1970s and 1980s, the positive relationship between increasing dietary intakes of total fat and saturated fat and the development of heart disease became well established. Since that time, research has taken a closer look at the individual fatty acids, both saturated and unsaturated, that make up dietary fats and are likely responsible for their particular effects on health. One polyunsaturated fatty acid, the omega-6 fatty acid linoleic acid (Kris-Etherton, Derr, & Mitchell, 1993), was found to lower the blood levels of low-density lipoprotein cholesterol (LDL-cholesterol), the lipoprotein most associated with increased fat deposits in the major arteries. Two polyunsaturated fatty acids found in fish, eicosapentaenoic acid and docosahexaenoic acid, both omega-3 fatty acids (Flaten, Hostmark, & Kierulf, 1990), were found to reduce the adhesiveness of blood platelets, the tiny bodies that function in blood clotting, and so lower the risk of myocardial infarction or stroke. Although polyunsaturated fatty acids were found to lower LDL-cholesterol levels, they also lowered high-density lipoprotein cholesterol (HDL-cholesterol) levels, the lipoprotein fraction that helps prevent fat deposits in the major arteries by removing cholesterol from the blood. This unfavorable decrease in HDL-cholesterol led researchers to continue to look for better dietary alternatives for the prevention of heart attack and stroke.

Most recently, investigators have looked at the effect of trans fatty acids on the development of heart disease. Trans fatty acids seldom

occur in nature but are formed when plant oils are hydrogenated to produce solid fats such as margarine. Short-term studies with healthy volunteers indicated that trans fatty acids caused a rise in LDL-cholesterol with an increased risk of heart disease (Willett, 1994). This finding has implications for food manufacturers producing table fats for consumers.

A research report documenting the relatively low incidence of heart disease among individuals living in the Mediterranean region directed attention to the type and amount of fat consumed by those populations (Kushi, Lenart, & Willett, 1995). Although most health providers in the United States recommend that fat provide no more than 30% of the total kilocalories in the diet, the Mediterranean diet included as much as 40% fat. A major difference, however, between the U.S. diet and the Mediterranean diet was the source of fat. In the Mediterranean diet, the major fat source is olive oil, high in monounsaturated fatty acids. Monounsaturated fats appear to protect against coronary heart disease by lowering LDL-cholesterol levels without lowering HDL-cholesterol levels; thus, the Mediterranean diet was offered as a healthy alternative to the typical American diet high in both total and saturated fats. The foundation of the Mediterranean diet is plant foods with high use of cereals, peas, beans and other legumes, fruits, and vegetables. The Mediterranean diet has likely had an influence on recent public health initiatives in the United States that emphasize grain foods, fruits, and vegetables.

Over the past decade, researchers have looked more closely at the means by which plant foods influence heart disease risk. At one time, intake of plant foods was thought to reduce risk because the plant foods replaced high-fat or high-caloric foods in the diet, which added to cardiovascular risk. Recent evidence indicates that components in the plant foods themselves are responsible, at least in part, for the health benefits provided (Milner, 2000). These components, which are present in plant foods, have been identified as phytochemicals (plant chemicals), some of which act as antioxidants. These food components will be discussed further in the section on Functional Foods.

Cancer

Because cancer continues to be the second leading cause of death in the United States (National Center for Health Statistics, 1999), investigators continue to examine potential carcinogens and protective factors. Although smoking remains a significant risk factor for all types

of cancer, food intake appears to play a role in raising or lowering risk. Researchers have explored the effect of saturated, polyunsaturated, and total dietary fat on cancer risk in various sites. Although individuals with higher intakes of all fats appear to have higher cancer risk, it has been difficult to relate specific fats with specific cancers. Generous intakes of fruits and vegetables do seem to exert a protective effect against cancer in both smokers and nonsmokers (Bloch, 1991), likely related to their antioxidant content. Plant foods high in fiber had been shown in several studies to reduce cancer risk, especially risk of colorectal cancer. Researchers related this effect to the action of fiber in moving food along the digestive tract more rapidly, and thus reducing the period of exposure of body tissues to potential carcinogens present in food (National Research Council, 1989). Recent reports, however, indicate that fiber alone does not lower the risk of colorectal cancer (Alberts et al., 2000). Thus, it appears that the protective effect observed in persons eating foods high in fiber is related either to the phytochemicals present in those plant foods or to the actions of both the fiber and other food components working together to guard against the formation of a cancer.

Osteoporosis and Bone Health

Osteoporosis and the loss of bone mass at older ages, increasing the risk of bone fracture and subsequent disability, have become a research priority over the past decade. Osteoporosis has both physical and psychosocial consequences because crippling changes in the vertebrae or a hip fracture often negate the older person's ability to live independently and require a move to the home of family members or to a facility with supervised care. Numerous studies have demonstrated the positive effects of increased intakes of calcium and vitamin D in preventing bone loss in elderly men and women (FNB, 1997). Although formerly considered to be a problem of aging women following menopause and loss of estrogen, bone loss brought about by changing hormonal patterns of testosterone has been recognized as a problem for aging men as well. Vitamin K, a nutrient generally known to initiate blood clotting, has been found to play a major role in the synthesis of proteins integral to bone matrix, and high intakes of dark green vegetables, the major dietary sources of vitamin K, have been associated with reduced hip fractures (Feskanich et al., 1999). Newly developed technologies such as dual x-ray absorptiometry, which measure bone mineral levels with a low risk of radiation, have

become the methods of choice for evaluating the effectiveness of intervention strategies for prevention of bone loss in both young and aging adults. Bone scans to verify bone health are an important component of physical examinations in women approaching menopause.

Researchers focusing on the prevention and intervention of bone loss have identified two groups in particular need of appropriate education relating to bone health: school-age children and African Americans. An important period of the life cycle in relation to bone health is the adolescent years when the major bone mass is accrued. The increasing popularity of soft drinks and fruit drinks has eroded the use of milk by both children and adolescents. Many teenage women consume less than 50% of the recommended level of calcium (Life Sciences Research Office Federation of American Societies for Experimental Biology, 1995). This finding has important implications for their bone health as middle-aged and older adults. It is also important that African Americans be reached with messages addressing the need for increased intakes of calcium and vitamin D. At one time, it was believed that African Americans, who have greater bone mass at all ages than Caucasians or Asians, were relatively immune to osteoporosis. Work over the past decade has suggested that aging African Americans are indeed vulnerable to bone loss and hip fracture (Norman, 1998). Food sources of calcium and vitamin D for lactose-intolerant individuals need to be explored.

Antioxidants and Phytochemicals

Various nutrients including vitamins C and E, the mineral selenium, and beta carotene along with other carotenoids, act as biological antioxidants. Antioxidants have the ability to inactivate free radicals that attack cells and destroy tissues. Free radicals and highly reactive oxygen molecules are natural byproducts of cell metabolism. They have an unpaired electron that can attack such structures as the polyunsaturated fatty acids in cell membranes and the proteins in DNA. Free radical damage has long been associated with tissue changes that occur in aging, but more recently, free radicals have been implicated in the etiology of various chronic disease conditions. These highly reactive molecules contribute to (a) damage to the coronary arteries, (b) cellular changes that result in a cancer, (c) development of cataracts and macular degeneration (a leading cause of blindness in older people), and (d) degenerative changes in the brain and nervous system associated with cognitive dysfunction in the elderly

such as senile dementia of the Alzheimer type (FNB, 2000). In recent years, research on antioxidants has moved from the study of synthetic antioxidant chemicals using animal models to the identification of antioxidants in food and their role in human nutrition.

Vitamins C and E have a physiological role as antioxidants, but other phytochemicals present in plant foods also act as antioxidants in the body. A study of 33,000 nurses over a 13-year period found those consuming five or more fruits and vegetables a day had a lower risk of cancer and heart disease (FNB, 2000). Older women consuming three or more daily servings of whole grains over a period of 9 years had a lower risk of death from heart disease (Jacobs, Meyer, Kushi, & Folsom, 1998). Human feeding studies have reported higher levels of antioxidants in the blood of subjects fed either supplements of vitamins C and E or optimum levels of plant foods (FNB, 2000).

Scientists are hard at work identifying the specific phytochemicals that may be responsible for the disease-protective effects of plant foods. One class of compounds being studied is the carotenoids. Carotenoids such as beta carotene can be converted to vitamin A (retinol) in the body. In the past, we believed that the major nutritional role of carotenoids was as precursor substances for vitamin A. We have since learned that they have important antioxidant functions of their own, unrelated to the action of vitamin A. Lutein and lycopene, carotenoids found in spinach and tomatoes, respectively, have no vitamin A activity but have particular anticancer properties (FNB, 2000). A major finding of importance to consumers is that vitamin supplements do not offer the same protection against chronic disease as the consumption of actual plant foods, either fruits, vegetables, or grains (Hunter et al., 1993). A combination of vitamins and phytochemicals in a natural food working together may be required for the benefits observed. Whole grains are of greater benefit in disease prevention than refined grains, suggesting that vitamins, minerals, fatty acids, and other substances found in the bran portion of the kernel are the important health-promoting agents in grains.

Identification of these health-promoting properties in plant foods has led to development of the term *functional foods*. The term functional foods has found its way into the vocabulary of both nutrition and food scientists and refers to foods that appear to have a positive effect on health over and above the actions of the known nutrients it contains (Milner, 2000). New directions in the development and marketing of functional foods will be discussed in the foods section of this review.

Folate

Folate, a member of the B vitamin complex, is another nutrient for which we have discovered important new roles. A devastating type of birth defect, neural tube defects (NTDs), has been under careful study since the mid-1980s. NTDs, resulting in serious mental and physical disabilities and in some cases early death in the children involved, tax a family both financially and emotionally. The most common NTD is spina bifida. Worldwide review of NTD cases led to the identification of folate in the etiology of this problem. Folate is required for the early fetal development of the brain and closure of the spinal cord, which occurs within the first 30 days of gestation. Women with low intakes of folate and poor folate status at the time of conception are more likely to give birth to a child with an NTD (Scholl, Hediger, Schall, Khoo, & Fischer, 1996). The need to ensure higher intakes of folate in all women of childbearing age was influential in the decision of the U.S. government to require fortification of all grain products with folate. This represented the first major change in nutrient fortification of grains in more than 50 years. It was expected that women consuming six servings from the grain group, as recommended in the FGP, should approach their recommended intake, despite limited intakes of fruits and vegetables. Fruits and vegetables have been the major contributors of folate in the U.S. diet (FNB, 1998). A recent evaluation by researchers at the USDA indicated that based on current levels of fortification, the majority of women of childbearing age studied in the 1994-1996 Continuing Survey of Food Intake by Individuals (CSFII) would have intakes of 320 ug of folate from grain products alone (Lewis, Crane, Wilson, & Yetley, 1999). The current RDA for folate is 400 ug (FNB, 1998). A recent report, comparing the occurrence of NTDs in the United States prior to and since the initiation of grain fortification, noted a 19% decrease in prevalence, although other factors may have contributed to this decline (Honein, Paulozzi, Mathews, Erickson, & Wong, 2001).

Researchers also have defined a new role for folate in the prevention of heart disease. Heart disease has its origins in the damage occurring in the coronary arteries through the deposition of lipids, further oxidation of those lipids, and subsequent narrowing of the blood vessel. A normal metabolite in the blood, homocysteine, when present in abnormally elevated levels, promotes lipid deposition and vascular damage. When folate status is poor, homocysteine cannot be converted to the next molecule in its metabolic pathway and so

accumulates in the blood. Fortification of grains with folate is expected to assist in maintaining appropriate blood homocysteine levels in primary prevention for cardiovascular disease (Jacques et al., 2001).

Implications for Future Research in Dietary Standards and Nutrient Requirements

The definition of nutrient requirements is complex. In addition, studies with humans require significant resources, including highly trained personnel, sophisticated equipment, extensive facilities, and adequate funds. Some studies require medical procedures and must be conducted in laboratories associated with medical facilities, although university food and nutrition departments have in the past supported live-in facilities for metabolic studies. FCS researchers bring many strengths to the study of nutrient requirements because they have the expertise relating to nutrient composition of foods, meal planning, and food management skills essential to the success of such studies. Collaborative efforts of medical, FCS, and other health researchers should be a priority. Studies relating to nutrient requirements that do not require invasive techniques or resident facilities such as long-term nutrient intake and bone health or studies of nutritional status that require only metabolites or cells present in blood samples are important areas of evaluation for FCS researchers. University administrators need to be made aware of the outstanding potential for such projects within FCS programs and the need for support in the funding of specialized laboratory equipment or technical assistance.

The changes in dietary standards outlined above also have implications for practice in FCS. Consumers accustomed to seeing the RDA as a measure of nutritional adequacy need to be informed of the meaning of the other categories and how they relate to daily dietary intake. The ULs are of particular importance to FCS professionals working with vulnerable population groups such as pregnant or lactating women, children, and the elderly. These groups can be targets for individuals marketing nutritional and dietary supplements and need to be cautioned as to the upper intake level of a nutrient that can be safely consumed on a regular basis. The concept that nutrients are important as part of an overall healthy lifestyle must continue to be reinforced in schools, with community extension groups, in public health and food assistance programs, and with the elderly. As we

continue to address questions about meeting nutrient standards with food and not supplements, FCS researchers have the background to develop food intake plans that will enable families representing different racial, ethnic, age, and income levels to select foods that meet the new dietary standards. These plans should be evaluated to determine their ability to support nutritional well-being over time. Establishing a research base that defines both consumer knowledge and attitudes relating to dietary standards could be another important contribution of teachers, extension specialists, and food professionals. On the public policy front, FCS members need to support continued funding of research that will enable us to define individual differences among persons and groups, such as the elderly, that influence dietary needs.

FCS professionals in education, research, and business should be important players in the efforts to discover and validate the roles of nutrients and phytochemicals in the health of persons of all ages. Chemical analysis is important in identifying the presence and structure of specific phytochemicals in natural foods. But, evaluation of the effects of food storage, processing, and home preparation methods on the bioavailability or possible loss of these substances requires the expertise of an FCS researcher who understands how food is treated in the home, in the marketplace, and in commercial food processing. FCS professionals work with home gardeners and are in a unique position to support research efforts looking at plant foods grown for home use, which likely involves different methods of fertilization or different cultivars as compared with large-scale commercial farming. As we determine the effects of home food preparation practices on the stability or loss of important phytochemicals, it will be the responsibility of FCS educators to inform the public about appropriate methods of cookery that will support the highest retention possible.

Fruits and vegetables are not currently consumed at the levels recommended by the FGP (Life Science Research Office, Federation of American Societies for Experimental Biology, 1995). FCS educators working with youth or adults can collect valuable data regarding the attitudes of consumers toward the role of particular nutrients and foods in disease prevention, forming a basis for nutrition education programs. Lewis, Filips, and Waltz-Hill (1999) reported that young women at risk for developing breast cancer, based on their family history, had not adjusted their dietary intake to reduce their risk and should be a target group for nutrition education. Positive health practices of self-care relating to bone scans or appropriate intakes of

calcium and vitamins D and K and long-term outcomes are important research areas for FCS professionals with access to community populations. FCS educators working with school food-service managers can effect important nutrition education in the areas of calcium and bone health and folate and NTDs. Monitoring intake of these nutrients following schoolwide nutrition education programs will contribute to our knowledge of food patterns among school children of all ages. Finally, promoting the creative use of fruits, vegetables, and grains in family meals and snacks and documenting the intakes of these foods by various socioeconomic, age, and ethnic groups will further our understanding of potential groups at risk.

NUTRITION AND PUBLIC POLICY

Critical Legislation in Foods, Nutrition, and Health

Since the late 1980s, food, nutrition, and health issues have received increasing attention at the federal level. This was related in part to the 1988 Surgeon General's Report on Nutrition and Health (USDHHS, 1988) supported by the expanding body of research implicating diets high in fat and sodium in the acceleration of chronic disease and premature death. The passage by Congress of the National Nutrition Monitoring and Related Research Program (NNMRRP) in 1990 mandated ongoing nutrition monitoring of the nation's people. The NNMRRP also required that the two major federal agencies involved with food, nutrition, and health, the USDA and the U.S. Department of Health and Human Services (USDHHS), work together to ensure coordination of this massive task (USDHHS & USDA, 1993). The tripartite objectives of the NNMRRP—monitoring, research, and policy making—promoted the integration of these activities at the federal level. Within this framework, the findings of FCS professionals implementing national nutrition monitoring activities can promote the development of questions that can be answered by FCS researchers and used in the formulation of national nutrition policy. An example of this interchange was the policy decision to fortify grain products with the vitamin folate. Research carried out in the previous decade linked poor folate status in the mother to the birth of an infant with an NTD. National nutrition monitoring activities provided evidence that U.S. women of childbearing age had low intakes of folate, leading to the change in food fortification laws in 1996. At

that time, the Food and Drug Administration (FDA) enacted the Final Rule requiring the addition of folate to all flour, cereal, rice, pasta, and other grain products, along with iron, thiamin, niacin, and riboflavin (FDA, 1996).

Research findings relating nutrition status, health, and disease incidence also influenced nutrition policy as related to food labels and the information consumers require to make informed food choices. The 1990 Nutrition Labeling and Education Act empowered the FDA to develop and finalize new regulations to be implemented by 1994 (Nutrition Labeling and Education Act, 1990) that would set standards for the new nutrition label. Extensive formative research was conducted as part of the development of the Nutrition Facts Panel now appearing as part of the food label. Widespread consumer surveys and focus group interviews were conducted by USDA and university researchers (Geiger, Wyse, Parent, & Hansen, 1991; Rudd, 1986) to obtain input from the public as to what food label format (table, bar graph, or other graphic design) could be most easily understood. The term *Daily Values* was developed to provide guidance to consumers regarding the amounts of the macronutrients, selected micronutrients, and fiber contained in one food serving in comparison to the total amount desirable in a 2,000 kcal or 2,500 kcal diet. The new regulations also directed the FDA to identify a process by which manufacturers could seek approval to make a health claim for their products on the nutrition label. To date, several food components have been approved. For example, oat cereals containing soluble fiber may carry a health claim on the label indicating their contribution toward reducing risk of coronary heart disease (Quaker Oats Company, 1997). Although nutrition labels have received broad acceptance across the food industry, there has been no systematic attempt to assess their influence on the foods purchased by various population groups. Also, there is no regulation of nutrition labeling on dietary supplements or herbs—a major need for consumers (USDHHS, Commission on Dietary Supplement Labels, 1997).

Food Guidance for Nutrition Education

Providing dietary guidance to the general public in a format that is easy to understand and utilize in making daily food choices has been a major focus of FCS researchers at USDA and USDHHS, the government agencies charged with this responsibility. The two major tools providing dietary guidance to the general public are the Dietary

Guidelines for Americans and the FGP that have evolved over the past 15 years. Each has a different purpose. Dietary guidelines are meant to focus on health concerns and make the public aware of the relationship between nutrition and the prevention of chronic disease. The purpose of food guides such as the FGP is to assist individuals and families in making day-to-day food choices and planning daily menus that will provide all required nutrients in the appropriate amounts.

Dietary Guidelines

The first edition of *Nutrition and Your Health: Dietary Guidelines for Americans* was published in 1980 (USDA & USDHHS, 1980). Subsequent editions appearing in 1985, 1990, and 1995 continued to focus attention on specific nutrients related to health, including fat, sodium, complex carbohydrates, and sugars. These documents stressed avoidance of excessive amounts of particular food components such as fat, sodium, and sugar but provided no quantitative advice for planning an appropriate diet. In 1998, a committee was formed and charged to review and update the guidelines (International Life Sciences Institute, Human Nutrition Institute, 1998) in preparation of a new edition to be published in 2000. This committee recommended several changes including: (a) increased emphasis on physical activity as a means of weight management; (b) more emphasis on grain products, fruits, and vegetables; (c) a more positive rather than negative approach to good eating; and (d) specific advice directing consumers to the food label and the FGP for help in food selection. Public hearings, written comments, and solicited input from professional groups, food manufacturers, consumer specialists, and the public followed the draft preparation of the new edition. As finally published, the fifth edition of *Nutrition and Your Health: Dietary Guidelines for Americans* (USDA & USDHHS, 2000) had a new format—the ABCs of good health—that encourage consumers to Aim for fitness, Build a healthy base, and Choose sensibly. A major shift in this edition is the integral use of the FGP in presenting dietary advice.

Food Guides

The FGP, as currently used, evolved over the past 10 years. In 1979, USDA issued the *Hassle-Free Guide to a Better Diet* (USDA, 1979), which established the food groups in the format as we now know

them: grains, fruits and vegetables, meat, milk, and other. Shortly thereafter, a research program was initiated to design a new food guidance system that would meet both the RDA standards and the Dietary Guidelines (Welsh, Davis, & Shaw, 1992). In 1984, the Food Wheel graphic was released, but consumers found it confusing and difficult to understand, and it was withdrawn shortly thereafter. By the late 1980s, a consultant group, Porter-Novelli, was hired to develop and test various graphic designs for the new food guide (Nestle, 1998b). The graphic representations evaluated included several different shapes such as a bowl and inverted pyramid with differences in proportionality based on the relative importance of the food group and the suggested number of servings. These graphics were tested with a variety of consumer audiences using written questionnaires, interviews, and focus groups. Following first release of the FGP in 1991, it too was withdrawn based on the concern that it had not been tested sufficiently with low-income and low-literacy populations or with school children. Certain commodity groups had also raised objections that the design was not supportive of their products.

Subsequent studies were designed to compare the effectiveness of pie charts and bowl shapes with the pyramid concept. All designs were found to effectively convey the concept of variety; however, opinions offered by more than 3,000 children and low-income adults indicated that the pyramid most effectively promoted the suggestion of moderation and proportionality (Welsh et al., 1992). In 1992, the FGP was released in final form and has continued to be the focal point of dietary guidance materials developed and distributed by USDA. In 1996, a food guide pyramid for children ages 2 to 6 was released to offer assistance in food selection to parents, child care workers, and health professionals. In recent years, various groups have participated in the development of FGPs adapted to particular ethnic groups or food patterns such as the Mediterranean, Hispanic, and vegetarian FGPs (USDA, Center for Nutrition Policy and Promotion, 2001).

The FGP has as its nutrition goal adherence to the dietary guidelines and provision of the RDA intake levels for all nutrients. Profiles of the nutrient content of portions within all the major food groups formed the basis on which it was developed. Researchers reviewed all RDAs for individual age and gender groups and evaluated both the food groups and portion sizes that would be required to provide the respective nutrients in recommended amounts, using a variety of foods that reflected the common eating patterns of Americans. Energy intake was an important consideration in these discussions in

light of the growing problem of obesity in the United States. Working within the categories of 1,600 kcal, 2,200 kcal, and 2,800 kcal, respectively, for individuals of low, moderate, and high physical activity, numbers of portions were equated from the lower to the upper levels of suggested ranges of intake. When their work was completed, the only RDA that could not be achieved within the completed FGP was the recommended iron intake for pregnant women (Welsh et al., 1992). However, iron supplements are usually prescribed to meet the elevated requirement in pregnancy.

Despite the intensive efforts involved in the development of the FGP, several limitations remain that offer important opportunities for FCS researchers. First, not all foods within each food group are equivalent in nutrient content; for example, pears do not contain the same amount of folate as oranges. For this reason, consumers are urged to eat a variety of foods within each group. Second, changes in the DRI have resulted in higher recommended intakes for both folate and calcium. Shaw, Escobar, and Davis (2000) noted that a practical solution to the current recommendations for calcium may be increasing the number of portions in the dairy group from two to three. At the same time, individuals who consume the highest number of recommended portions of grains and who regularly eat dark green leafy vegetables and legumes are likely to meet their calcium needs without an additional serving from the dairy group. The diverse eating patterns observed in the U.S. population and the nutritional implications for the FGP framework require continuing evaluation.

Despite limitations, the FGP not only assists individuals in planning appropriate diets, it also provides a tool for rapid assessment of the daily dietary intakes of individuals and groups of different ages and in a variety of settings. Hertzler, Frary, and Ward (1996) used the FGP to evaluate menus served to preschool children in a university day care center and successfully predicted intakes of protein, vitamins A and C, calcium, and iron. Lack of menu variety contributed to the limited intakes of particular nutrients, including iron. Walter and Soliah (1997) developed a coding system for use with the FGP that enabled students to predict their total fat intake and percentage of kilocalories obtained from fat.

Nutritional Contribution of Food Assistance Programs

A major responsibility of USDA is oversight of several food assistance and nutrition education programs serving population groups at

nutritional risk. Two major programs providing both food assistance and nutrition education are the National School Lunch Program serving school-age children, and the Women-Infant-Children Supplementary Food Program (WIC) serving pregnant and lactating mothers and infants and children up to age 5. Eligibility for participation in WIC is based on both income level and nutritional risk. The Expanded Food and Nutrition Education Program (EFNEP) and Food Stamp Nutrition Education Program provide food and nutrition education and referral to low-income families and individuals of all ages. FCS researchers have demonstrated the national impact of these programs in both improved nutritional knowledge and health and nutrition outcomes.

School Nutrition Program (National School Lunch Program)

Over the past 10 years, research and evaluation within the National School Lunch Program have brought about changes in the nutritional standards, administrative practices, and nutrition education efforts within the program. In the mid-1990s, an extensive national evaluation of the School Nutrition Program was commissioned by researchers within USDA (Burghardt, 1995; Gordon, Devaney, & Burghardt, 1995; USDA, Food and Nutrition Service, 2001). Food and nutrient intakes of participant and nonparticipant children from the same socioeconomic environments were evaluated on the basis of both their noon meal, obtained within the school lunch program or elsewhere, and the 24-hour period that included that noon meal. Both the value of the breakfast meal and its impact on the total daily intake were examined in participant and nonparticipant children. The importance of both the school breakfast and the school lunch meals were affirmed in that children consuming either meal had improved nutrient intakes over children from similar racial, ethnic, or socioeconomic groups that either obtained those meals elsewhere or did not eat those meals. More adequate intakes of vitamin A, calcium, and magnesium were of particular importance among those children consuming the school lunch meal. More adequate intakes of riboflavin, calcium, and magnesium were observed in those children eating the school breakfast meal. At the same time, participation in the school lunch and breakfast programs was associated with higher intakes of total and saturated fat.

The Healthy Meals for Healthy Americans Act passed by Congress in 1994 strengthened the nutritional component of the School

Nutrition Program. School food managers were mandated to follow the Dietary Guidelines for Americans, limiting total fat to 30% of total kilocalories and saturated fat to less than 10% of total kilocalories, reducing sodium and sugar, and increasing fiber. Several different methods of menu planning were approved for use by school managers to allow some flexibility in the process. Evaluation of the menu planning process, begun in 1996, suggests that although schools are moving toward the nutritional goals set for breakfast and lunch menus, school food-service managers have encountered problems with menu planning and evaluation of nutrient content (USDA, 2001).

TEAM Nutrition, a comprehensive nutrition education initiative put forth in the Healthy Meals for Healthy Americans Act promotes the integration of foods and nutrition education into the general school curriculum as well as the school lunch program to bring about changes in food attitudes and behavior. To date, 30,000 schools nationwide have been designated as TEAM Nutrition schools (USDA, 2000).

Women-Infant-Children Supplementary Food Program

The WIC program, begun as a pilot program in 1972, has consistently demonstrated its effectiveness in reducing premature births, lowering the incidence of low and very-low birth weight infants, reducing the incidence of anemia in children, and improving the diets of both pregnant and postpartum women (Owen & Owen, 1997). A priority area for nutrition education and intervention over the past 12 years has been the promotion of breastfeeding as the optimal method of infant feeding. Between 1989 and 1995, the percentage of WIC mothers breastfeeding in the hospital increased by 36.3%, whereas the percentage for non-WIC mothers increased by 12.9%. Over this same period the percentage of WIC infants breastfeeding at 6 months of age increased by 51.2%, whereas the increase among non-WIC infants was 22.7% (Ryan, 1997). WIC also has been found to be cost-effective in terms of dollars spent. Estimates indicate that every \$1 invested in prenatal WIC services results in a savings of more than \$3 in infant medical services over the first year of life (Owen & Owen, 1997). The U.S. General Accounting Office also concluded that for each federal dollar invested in WIC, between \$2.89 and \$3.50 was saved on health care expenses over the first 18 years of life of WIC children. Recent studies have looked at the cost-benefits of breastfeeding as compared with formula feeding in respect to both WIC and Medicaid dollars.

Among Colorado infants, breastfeeding resulted in savings of \$438 over the first 6 months, which included a \$112 savings in Medicare costs (Montgomery & Splett, 1997).

Expanded Food and Nutrition Education Program

The Expanded Food and Nutrition Education Program (EFNEP), organized within Cooperative Extension, celebrated its 25th anniversary in 1993 (Brink, 2000; Leidenfrost, 2000). EFNEP was the first major nutrition education program to deliver services using trained paraprofessionals who came from the same communities and economic levels as the target audience. Over its history, EFNEP has demonstrated that not only do participants improve their nutrient intake, but they also gain self-esteem and independence, which has resulted in new educational opportunities and employment successes. For much of its history, the principal measure used to evaluate EFNEP program impact was the 24-hour dietary recall. The 24-hour recall, completed at program entry and completion, assessed changes in the dietary adequacy of the EFNEP homemaker interpreted on the basis of the FGP. Unfortunately, this method failed to document other changes that occurred in planning, selecting, or buying food; food handling and safety practices; adherence to the Dietary Guidelines; or using food labels. A Food Practice Checklist, designed for use with low-literacy homemakers, successfully detected changes in these areas of behavior (Bowens, Cox, Pratt, & Gaylord, 1995) and was an important first step in addressing new aspects of important EFNEP learning.

Washington State researchers (Armstrong & Butkus, 1992) evaluated the effectiveness of a modified program delivery plan that included six lessons provided in a group setting and six mail lessons followed by a telephone call, as compared with the traditional format of 12 one-on-one visits. It appeared that characteristics of the program participants, rather than the difference in program delivery, influenced attrition from the program. In that population, income appeared to influence participation, and those authors raise some important issues applicable to many nutrition education programs. First, are some very-low-income clients lost to programs because they do not have the money to implement the dietary improvements recommended, and second, are clients lost to the program because of inappropriate educational level or the lack of cultural sensitivity of the materials?

More recently, EFNEP researchers have followed the lead of WIC researchers in looking at the cost-effectiveness to the participants in food dollars saved and cost-effectiveness of the program in health care dollars saved. The Tennessee program (University of Tennessee Agricultural Extension Service, 1998) applied cost-benefit analysis to a study of 371 families to determine (a) if EFNEP helped households use their food resources wisely, (b) if EFNEP helped households improve their nutrient intake, and (c) the cost of improving these behaviors. Results indicated that households would realize savings of \$600.52 over a 5-year period as a result of EFNEP participation. These savings could reduce the need for emergency food assistance and make money available for other necessities. In addition to saving money, participants had higher intakes of iron, vitamins A and C, and fiber than control families (control families delayed entrance into the program until the study was completed). At a program cost of \$388.26 per family, the benefit-cost ratio was a \$2.48 savings in food expenditures for every \$1 of program costs. Studies conducted in Virginia (Lambur, Rajgopal, Lewis, Cox, & Ellerbrock, 2001) and Iowa (Iowa State University, University Extension, 2001) evaluated the potential savings in health care costs that could be realized as a result of delaying or avoiding health costs or lost workdays associated with nutrition-related conditions addressed in EFNEP teaching. Results indicated that current and future cost savings of \$10.64 could be expected per \$1 invested in the program.

In 1995, nutrition education funds were made available on a competitive basis to 12 state EFNEP programs to implement nutrition education with food stamp recipients in their program areas (Anliker et al., 2000). The Food Stamp Nutrition Education Programs (referred to as the Family Nutrition Programs in some states) have resulted in unique programs that address existing needs. The Family Nutrition Program in Connecticut (Perez-Escamilla et al., 2000), working with Hispanic families, reported a positive effect of food stamps combined with nutrition education in improving the diets of preschoolers.

Implications for Future Research in Nutrition and Public Policy

As our population becomes more diverse in age, health status, and ethnicity (National Center for Health Statistics, 1999), the need for food guidance materials to address the particular concerns of individual groups will grow in importance. Persons age 85 and over are likely to have some degree of chronic disease or disability, and nutrition

education materials that suggest foods that are high in nutrient density and simple to prepare will be in great demand. FCS researchers not only need to be involved in developing the content of such materials but also must assist in evaluating what formats might be most applicable to this age group. Food guide pyramids that provide food selection advice for individuals representing a variety of ethnic and cultural groups have been developed by various organizations; however, they have not been evaluated as to their appropriateness for meeting long-term nutritional needs.

As noted above, the current FGP has limitations in reference to newly released DRIs, and researchers must consider a range of food patterns that will provide all nutrients in the recommended levels. Those working with particular regional and ethnic groups can contribute to our knowledge of current food patterns and choices and assist in building the database that will be needed for the development of food guidance materials in the future. Byrd-Bredbenner, Alfieri, Wong, and Cottee (2001) emphasized the need for education to assist consumers in using the Nutrition Facts Panel. The influence of the Nutrition Facts Panel on food purchases among consumers of different ages and lifestyles is another topic for evaluation.

Low-income mothers and African American mothers are the least likely to breastfeed (National Center for Health Statistics, 1999). WIC researchers must continue to identify barriers and develop social marketing strategies that will promote breastfeeding with these groups. FCS investigators representing both the nutritional and behavioral sciences could collaborate in study of the influence of the family, especially the infant's father, in the breastfeeding decision. Various researchers have evaluated the cost-effectiveness and short-term impact of EFNEP. Arnold and Sobal (2000) have directed attention to the need for study of the long-term effects of nutrition learning and health outcomes among EFNEP participants. Those workers also pointed to the need for publication of completed EFNEP studies in refereed journals.

There appear to be barriers within school nutrition programs that have limited their ability to comply with mandates relating to the planning of menus and selection of foods that will meet the dietary guidelines. FCS researchers might assist in identifying these barriers and seeking solutions. Development of recipes lower in fat that are well accepted by school-age children would contribute to success in achieving these goals.

FOOD BEHAVIOR AND NUTRITION INTERVENTION

Helping persons of all ages select and consume a nutritious diet consistent with their cultural or ethnic pattern, religious beliefs, and personal preferences has been a major focus of FCS professionals throughout our history. FCS educators and researchers in government agencies have developed and evaluated educational tools such as the FGP to assist in this effort. Educators working with all age groups within the community have focused on both the nutrition knowledge and the food skills required for individuals and caregivers to select and prepare appropriate foods for themselves and others. FCS professionals in food service and business are providing the American public with a safe and adequate food supply. Unfortunately, we still do not fully understand the myriad of factors that influence food selection, and the application of models to bring about behavior change is pertinent.

Food Selection and Nutritional Adequacy

The major sources of data regarding the food selection patterns of the U.S. population are the national studies mandated by the NNMRRP. The Continuing Survey of Food Intake by Individuals (CSFII) and the National Health and Nutrition Examination Survey (NHANES) supervised by USDA and USDHHS, respectively, represent stratified samples of the U.S. population. The selection of participants for these studies is statistically defined to be sure that all age and major race and ethnic groups are presented in the same proportion in the study sample as they are in the general population. Vulnerable groups such as young children and the elderly are oversampled to ensure adequate numbers for data evaluation. By federal mandate of the NNMRRP, these studies are ongoing (USDHHS & USDA, 1993).

Over the years, issues of hunger, food security, and the contribution of food assistance programs such as food stamps to a family's nutritional well-being have been explored using these data. Research reports published in the late 1980s, based on the 1977-1978 USDA Household Food Consumption Survey (now replaced by the CSFII) set the stage for continuing analysis of the relationship between money spent for food and nutritional well-being. Morgan, Peterkin, Johnson, and Goungetas (1986) pointed to the economies of scale that could be achieved by larger families, resulting in a higher nutrient

density per dollar spent for food. These researchers also emphasized that lower income households achieved greater nutrient levels per food dollar, an important concept today as we work with low-income families to maximize their nutrient intake. Another evaluation (Volker & Winter, 1989) noted that households with greater nutrient return for their food dollar used more plant foods such as cereals, rice, pasta, beans, and nuts, and fewer high-cost meats and beverages. Those researchers also looked closely at the micronutrients, such as vitamin B-6, iron, and magnesium, and concluded that for some nutrients it may be necessary to recommend specific foods, rather than food groups. These are issues that we continue to struggle with today as we recognize the limitations of the FGP to meet recommended intakes of certain nutrients.

Evaluations of more recent food surveys have reinforced the relationships between income level and nutritional adequacy. The Third National Report on Nutrition Monitoring published in 1995 (Life Sciences Research Office, American Societies for Experimental Biology, 1995), a product of combined data from USDA and USDHHS research, noted that individuals with incomes below the poverty line had lower intakes of energy and important vitamins and minerals than those whose incomes were within 130% of the poverty line or higher. Food stamp recipients have more nutritionally adequate diets than nonrecipients of similar age and economic background.

Recent research reports based on data from the 1994-1996 CSFII have addressed some problem areas that continue to exist in the U.S. diet. Although the percentage of kilocalories from fat declined between 1989 and 1995, the actual amount of fat in the diet increased, as adults of all ages increased their energy intakes (Kennedy, Bowman, & Powell, 1999). In that evaluation, individuals whose diets met the dietary guideline for fat obtained more of their energy from fruit, grains, rice, and pasta, whereas fried potatoes were major sources of kilocalories among those with high-fat diets. The importance of dietary antioxidants in the prevention of chronic disease was noted earlier in this review. Ma, Hampl, and Betts (2000) reported that smokers have the lowest intake of antioxidants of any population group and eat the fewest number of fruits and vegetables. Individuals who smoke are already at greater risk for several chronic diseases including cardiovascular disease and cancer.

Several weight-reduction diets heavily advertised to the general public emphasize low carbohydrate intake as the ideal way to reduce body weight. Individuals whose diet contains less than 30% of total

kilocalories from carbohydrate have the poorest diet quality within all ranges of carbohydrate intake, are less likely to meet the dietary guidelines for fat, and are less likely to include at least one serving from each of the major food groups (Kennedy, Bowman, Spence, Freedman, & King, 2001). Individuals following poorly balanced weight reduction diets are in particular need of dietary counseling and assistance.

Models for Behavior Change

FCS educators are well aware that knowledge alone does not necessarily lead to a change in behavior that may be critical to health and well-being. Several models have been developed to help us understand how and under what circumstances individuals make and implement decisions relating to food intake or other health-related behaviors. FCS researchers have tested these models in nutrition education interventions.

The Health Belief Model was originally developed by behavioral scientists in the U.S. Public Health Service in the 1950s to address why individuals at risk did not respond to disease prevention initiatives such as smoking cessation programs. The Health Belief Model is built on the premise that readiness to act on a health behavior is based on the perception of one's risk of developing the disease and the relative consequences of the disease (Patterson, Kristal, & White, 1996). The greater the perceived risk or severity, the more likely the individual is to act. The second component of this model is one's perception that a change in behavior will indeed influence the outcome, or, in other words, reduce his or her risk of the disease. Inherent to the individual's ability to act is the appropriate knowledge or skills to successfully implement the new behavior required. The Health Belief Model has been applied to the cancer prevention strategy of the National Cancer Institute. Adults with a stronger belief in the diet-cancer connection were more likely to decrease their intake of fat and increase their intakes of fiber, fruits, and vegetables (Patterson et al., 1996). In a later section of this review, we will see an application of the Health Belief Model to pesticide issues.

Several researchers have applied the Theory of Reasoned Action to the study of food behavior. This conceptual framework suggests that an individual's intention to perform a behavior is the best predictor of the behavior (Axelson, Brinberg, & Alloen, 1986). Intention is related to one's attitude toward the behavior or the likelihood that it will lead

to a certain outcome. Researchers at Washington State (Armstrong, Gilliam, & Stem, 1992) reviewed questionnaires returned by 500 heads of households over the age of 45, who were randomly selected in the Pacific Northwest. More than half reported initiating and successfully maintaining behaviors to reduce dietary fat by avoiding high-fat foods or making changes in food preparation methods. Those individuals who neither tried nor were successful in reducing their fat intakes had less knowledge of how to reduce dietary fat or were somewhat ambivalent about the benefits to be derived.

Over the past decade, the Stages of Change model has been widely studied in food behavior change. Adapted from the Transtheoretical Model of Behavior Change developed to understand smoking cessation, the Stages of Change model proposes that all individuals pass through a series of stages or steps in the behavior change process and that interventions are most successful when adapted to the stage of the individual at that time. The five stages in this model are (a) *precontemplation*, in which the individual is not aware of needed changes or is not interested in changing; (b) *contemplation*, in which the individual is considering making a change in the next 6 months; (c) *preparation*, in which the individual has decided to make a change to take place in the next 6 months; (d) *action*, in which the individual is trying to make the change but for less than 6 months; and (e) *maintenance*, in which the individual has successfully made the change and has continued it for at least 6 months (Greene, Rossi, Reed, Willey, & Prochaska, 1994).

The stage of an individual or group is an important factor in bringing about change. In a study of 744 well-educated adults, individuals in the action stage were more likely to have reduced their fat intakes to 30% or less of their total kilocalories (Greene et al., 1994). This model appeared to influence fruit and vegetable intakes among 3,500 African American church members in North Carolina who were surveyed by telephone (Campbell et al., 1998). The participants in precontemplation, contemplation, and preparation stages consumed only about half as many fruits and vegetables a day as compared with those in the action and maintenance stages (3.3 to 3.5 servings a day vs. 6.5 servings). The individuals in the precontemplation stage were very conscious of barriers to increasing their intakes of fruits and vegetables.

It is important to know the stage of an individual or group when planning an intervention. For audiences that have not considered a diet and health connection, a program to build awareness would be

appropriate. When individuals are in the stages of preparation or action, it will be necessary to provide them with practical information for implementing that change such as reading labels to identify foods lower in kilocalories or fat or new methods of preparing fruits or vegetables. A mail survey conducted in 11 western states and the District of Columbia (Auld et al., 1998) reported that individuals with strong health concerns were more likely to be in the action or maintenance stages and lowering their fat intakes or raising their fiber intakes.

FCS educators working in schools or other community settings might benefit from the Diffusion of Innovation Model, which suggests that some individuals are rather daring in accepting new ideas or behaviors, whereas others move ahead more slowly. The innovators or early adopters may act as positive influences in encouraging others to also change their behavior. An example of the Diffusion of Innovation Model was a program provided by a popular chef in the community who had just recovered from a heart attack and was learning new low-fat cooking skills (Reichler & Dalton, 1998). His role as an early adopter encouraged other chefs to adapt their cooking techniques to support health initiatives. FCS researchers and educators can build on these models of behavior change in developing their nutrition education strategies.

Nutrition Education Strategies for Behavior Change

FCS researchers have implemented and evaluated intervention programs with many different audiences, including children and youth in both formal and informal settings such as schools, Head Start, or 4-H cooperative extension groups. Adults have been reached through churches, Cooperative Extension activities, or at-home learning. These programs have been delivered in various ways including formal and informal classes, videos, newsletters, or distance learning.

The class format has been effective in reaching students of all ages with effective nutrition education; however, it is important that increases in knowledge and skills and changes in food behavior be considered in evaluating outcomes. College students demonstrated improved dietary intake scores following enrollment in an academic nutrition class (Hertzler & Frary, 1995). FCS classes are important in reaching high school students with food and nutrition education. More than 90% of Iowa students ranging in age from 14 to 18 years indicated that they had learned about nutrition in at least one school class (Thomsen, Terry, & Amos, 1988). The subject classes noted in

decreasing order were home economics classes, health classes, science classes, and physical education classes. However, for information relating to sports performance, most students indicated they would seek the help of their coaches. Even a short unit on nutrition as part of a physical education class can influence food behavior. Adolescent females receiving three classes on the importance of calcium with practical suggestions on good dietary sources demonstrated an increase in nutrition knowledge and a 30% increase in calcium intake over baseline scores 1 month following completion of the unit (Green, McIntosh, & Wilson, 1991).

The implementation of the TEAM Nutrition initiative in 1995 led to new efforts to develop and test models for integrating food and nutrition subject matter with the school curriculum. Colorado researchers evaluated the effectiveness of using special resource teachers trained in nutrition and experiential education to supplement the instruction provided by the classroom teachers. Students in classrooms with the alternate approach of classroom and special resource instructors demonstrated greater learning and higher intakes of fruit and vegetable servings at lunch (Auld, Romaniello, Heimendinger, Hambidge, & Hambidge, 1999). FCS professionals are uniquely qualified to bring both nutrition theory and application to the school classroom.

Informal classes have long been a major method for reaching adults with nutrition education. Group classes have been effective with EFNEP participants, WIC mothers, and train-the-trainer courses. A report from the Maryland WIC 5-A-Day promotion program indicated that changes in fruit and vegetable consumption were related to the number of nutrition classes attended, as well as the mother's baseline Stage of Change, race, and education (Havas et al., 1998). Consumption of fruits and vegetables increased by one-half serving per day. Providing an opportunity to ask questions and allowing participants to interact with each other appears to increase learning among individuals of all ages. In a New Mexico WIC program in which mothers and caregivers ranged from 18 to 68 years of age, clients who participated in a facilitated discussion group had a stronger belief in their ability to carry out the recommended child-feeding behaviors than those who received their nutrition education in a lecture format or from written brochures (Abusabha, Achterberg, McKenzie, & Torres, 1998).

FCS professionals have continued to be alert to both written materials and audiovisual media that can be effective in reaching groups with particular needs. An ongoing challenge is the availability of

written materials that are appropriate for consumer audiences as related to their age, educational level, language, or ethnic and cultural backgrounds. The availability and appropriateness of nutrition books for the general public were evaluated by Swanson and Birkliid (1992). They reviewed 32 books in the popular press covering nutrition, sports nutrition, wise use of herbals, and low-fat cooking that were generally recommended by nutrition and health educators. These workers found the mean reading level to be grade 10, and, therefore, out of the reach of low-literacy consumers. Videos might be a more appropriate method for reaching low-literacy audiences or individuals who want to learn at home. A pilot study conducted by the North Carolina Extension Service (Dunn, Lackey, Kolasa, & Mustian, 1998) indicated that videos developed for parents and their 5- to 8-year-old children to view at home together were well received by the participating families.

Newsletters have been shown to be effective when developed for a particular target audience. Among older people ages 60 to 70 years, a series of five newsletters, evaluated on the basis of pretest and posttest scores, resulted in a significant increase in nutrition knowledge and ways to reduce dietary fat (Taylor-Davis et al., 2000). In that study, individuals who received a telephone call 10 to 14 days after the newsletter, providing an opportunity for them to review the information or ask questions, scored higher on the posttest evaluation. A newsletter or video series distributed by mail could reach elderly persons or caregivers who cannot leave their homes to attend classes or individuals whose work schedules preclude attendance at organized events.

A research tool to assist in formative evaluation and effective program development is the focus group. Focus groups usually consist of 5 to 12 people who are brought together to discuss their needs, concerns, beliefs, or opinions on a particular topic. A trained moderator leads the participants through a series of open-ended questions maintaining a nonthreatening environment. The qualitative information obtained from focus group interviews of a culturally diverse EFNEP clientele assisted program developers in identifying barriers to food-behavior change and preferred educational activities. The insight obtained from their low-literacy participants helped developers structure lessons that not only provided practical information but also included hands-on activities and opportunities for sharing (Hartman, McCarthy, Park, Schuster, & Kushi, 1994). Focus groups have been used to evaluate nutrition education materials. The target group can provide input as to readability, ease of understanding, or

usefulness and perception of the information presented (Trenker & Achterberg, 1991).

Brown and Kiernan (1998) used both questionnaires and focus groups to evaluate and improve a pilot program on osteoporosis education delivered by FCS extension professionals in Pennsylvania. Not only did this evaluation assist in selecting the best site for this intervention (worksites, child care sites, or cooperative extension offices), but it also provided valuable information as to program materials and content. For example, worksite participants indicated that nonfat dry milk and yogurt were the most useful foods in adding calcium to their diets and suggested that recipes be adapted for the microwave. Evaluation of a pilot program can allow the researchers to identify weaknesses critical to program success.

Food Behavior and Intervention

When planning a nutrition intervention, one must look at both attitudes and values that influence food practices in the target audience as well as incentives and barriers to behavior change. Written questionnaires, telephone interviews, and focus groups were common methods of data collection in these research projects.

Dietary fat intake. Intake of dietary fat and selection of food items lower in fat appear to be influenced by the stage in the family life cycle. Peterson, Kris-Etherton, and Sigman-Grant (1994), using a focus-group approach with mothers of young children, reported that the preference of family members for higher fat foods, the preferred taste of higher fat foods, and the increased cost and time for preparation of foods lower in fat were considerations leading to less frequent use of lower fat items. However, in these mothers, concerns about safety—whether lower fat foods are safe for young children either developmentally and emotionally—also influenced food behavior. Age is a significant factor in efforts to lower dietary fat intake (Girouard, Hunt, Pope, & Tolman, 1997), as a survey of college faculty, staff, and students confirmed that individuals under age 25 and over age 45 were more likely to use low-fat products.

Food behavior and convenience. Work with families from the state of Washington looked at the relative importance of convenience in food preparation versus nutrient intake among health-conscious adults (Armstrong, Lange, & Stem, 1991). These results also indicated that

stage in the family life cycle was an important factor regardless of health beliefs. Convenience was an important factor for families with children, adults under age 40 in all adult households, and even adults under age 50 who lived alone. Convenience was less of an issue for individuals over age 50, whether living alone or with others. The more meals the respondent prepared, the greater the interest in easy-to-prepare meals.

Food intake in children. A major public health problem in the United States and worldwide is being referred to as the *obesity epidemic* (Coulston, 1998). Psychosocial and physical factors have a role in determining both obesity and extreme thinness among children and adolescents. Although the female in the household is usually recognized as the gatekeeper, fathers or male guardians also influence food patterns, particularly in male children. Taper, Frigge, and Rogers (1991) evaluated the triceps skinfold fat measurement in White boys of elementary age and the child-feeding attitudes of their fathers or father figures in the home. They reported a positive correlation between the child's fat measurement and the degree to which the male parent viewed food as a reward, soothing agent, or expression of love and affection. The use of food as an expression of love or reward or the use of food to replace time spent with a child by a busy parent could play a role in the growing numbers of obese children.

The presence in the home of two parents or caregivers versus one influenced nutritional adequacy among 3,000 preschoolers from families with one (usually the mother) or both parents present (Bowering & Wynn, 1986). Children living in a single-parent family had an increased nutritional risk. Boys living with their mothers were more likely to have marginal iron status, and girls were more likely to have heights below the median for their age and sex. Income status was lower in the single-parent families and likely contributed to these findings; however, time for food preparation by the single caregiver resulting in a greater intake of snack foods is another issue to be explored.

Food patterns and preferences are developed early in life; thus, some experts have suggested that nutrition education and strategies to improve the nutritional value of meals and snacks be extended to include the very youngest children in preschool and Head Start programs (Bollella et al., 1999.) An evaluation of growth status in 987 low-income children from 3 to 5 years of age (Doong, Shariff, Hoerr, Bond, & Hartgerink, 1998), pointed to the need for intervention in

reference to both low body weight and obesity. It was reported that 60% of these Michigan children were below the 50th height-for-age percentile according to growth charts of the National Center for Health Statistics, 65% of the children were heavier for their height than the reference standard, and 9.3% were obese. Those workers pointed out that the Head Start program might begin to target children who need special medical services and refer families to appropriate programs such as WIC or EFNEP. It is of interest that 65% of the children came from single-parent families.

Food practices of adolescent mothers. Teenage pregnancies continue to be a public health concern in the United States. Researchers at the University of Tennessee examined the nutrient intake of pregnant adolescents and the knowledge and attitudes that influenced these intakes (Carruth & Skinner, 1992). The mothers studied were younger than 18 years of age at the time of conception and resided in rural communities. It was evident that intensive nutritional counseling and support was needed for the pregnant teen. Most of the 155 mothers interviewed recognized their need for calcium and consumed liberal amounts of this nutrient, but many also considered liberal weight gain to be extremely important. They also had the common belief that the fetus would take the nutrients it needed first, at the expense of the mother if necessary, discounting their critical need for appropriate nutrients to support both their health and the health of their fetus. Some in the group had the opposite problem of overuse of vitamin supplements. About the time these data were collected, new recommendations for weight gain in pregnancy were released that suggested more liberal weight gain than was formerly the goal (Institute of Medicine Subcommittee on Nutritional Status and Weight Gain During Pregnancy, 1990). Nevertheless, excess weight gain during pregnancy will be retained and can contribute to obesity in later life.

Just as pregnant adolescents have misconceptions relating to their nutritional needs during the critical period of gestation, their child-feeding practices may also place their infants at nutritional risk. Auld and Morris (1994) addressed infant feeding practices among Anglo and Hispanic adolescent mothers and evaluated the influence of grandmothers on child-feeding practices by interviewing 20 mother-grandmother pairs. Although the adolescent mothers verbally cited appropriate feeding practices, they commonly demonstrated behaviors such as early weaning, early introduction of solid foods, and feeding inappropriate foods such as soda. In the Hispanic

pairs, grandmothers appeared to play a highly supportive role. Taylor, Serrano, Anderson, and Kendall (2000) have since developed a successful intervention program with low-income Hispanic mothers by training Hispanic grandmothers (*abuelas*) to provide appropriate knowledge and skills on feeding preschoolers.

Emergency food assistance. Oregon State researchers (Raab, Holyoak, & Raff, 1988) addressed the issue of hunger among needy individuals and families. According to questionnaires completed by 3,200 emergency food recipients in the Northwest, 46% were employed either part-time or full-time, pointing to the plight of the working poor, and about half of these family members were children. Major sources of information about emergency food help for hungry persons are friends and neighbors (55%) and the food stamp office (24%) (Xiao, Malrouto, & Olson, 1995). Mass media does not appear to be an information source for locating emergency food aid.

Opportunities in Fitness and Health

Fitness and health have emerged as topics of great interest to the general public. Brown, Adams, Sims, and Kaltreider (1988) performed a review of Cooperative Extension foods and nutrition plans of work from 16 states for the years 1984 to 1987, just prior to the release of the Surgeon General's Report on Nutrition and Health (USDHHS, 1988). At that time, 76% of all effort was directed toward normal nutrition and family food management and only 21% to the relationship between diet and health. By 1990, a survey of Virginia extension home economists indicated 85% felt confident addressing exercise and fitness issues in extension newsletters or talking to clients about the importance of exercise to health (Pratt & Howze, 1990). Among the 110 home economists who responded to the mailed questionnaire, special diets as related to health needs, stress management, cardiovascular disease, health-related physical activity, and weight control were the top five inservice needs. A survey of FCS administrators, published in 1990, indicated general agreement that health promotion and wellness fell within the perspective of FCS and that community educators needed to be trained in this area (Crockett, Bennett, & Brown, 1990); unfortunately, at that time, only about half of the programs surveyed offered courses in these topics.

The need for FCS educators to address health-related topics was evident in the W-153 Regional Research Project that reported the

health information sources of 828 adults ages 45 and over (Williams et al., 1993). Of the respondents ages 45 to 59, 64% obtained their diet and health information from newspapers and magazines, whereas 57% received such information from their physicians. Although 67% of those ages 60 and over relied on their physicians, 50% also relied on newspapers and magazines. Consumers need guidance in how to evaluate sources of health and nutrition information including media sources and the Internet. At the same time, FCS professionals need to seize all opportunities to provide valid and appropriate information via mass media.

Training for Cultural Competency

FCS professionals are recognizing the need for cultural competency and the importance of training professionals to work successfully with individuals whose race, religion, culture, or ethnic background differs from their own. Hertzler, et al. (1995) identified a model for training nutrition educators in cross-cultural counseling by pairing students with a homemaker representing a culture or ethnic food pattern that was new to them. FCS researchers at a midwestern university (McComber & Postel, 1992) and an eastern university (Head & Stuhldreher, 1998) developed college-level courses on multicultural food patterns in response to the finding that many FCS students had a limited knowledge of food patterns other than their own and were unprepared to counsel others. FCS educators in another baccalaureate program reported successful use of the USDA Food Plans to help students develop food budgeting skills and develop sensitivity to food-cost problems of economically diverse populations (Cotugna & Vickery, 1992).

The importance of cross-cultural competency among FCS professionals working in the areas of food, nutrition, and health was pointed out by Mtika and Armstrong (1997) who surveyed staff members and parents and other caregivers at 12 Head Start centers serving largely Latino, Vietnamese, and African American families. Although both staff members and families thought it important that Head Start personnel identify the ethnic foods common to the children in their program, staff members were less likely to recognize the importance of including families in planning food and nutrition services. An imperative for successful program development is the recognition of the individuality of food practices, attitudes, and beliefs, and the need

to respect and build on those practices in helping individuals and families plan a healthy and appropriate diet.

Implications for Future Research in Food Behavior and Nutrition Intervention

At present, the NHANES and CSFII studies are the major sources of information describing the food intake and food practices of the U.S. population. Each of these studies makes a unique contribution to our knowledge base. The NHANES provides not only information relating to food intake but addresses nutritional status as well, including body weight and body size, biochemical measurements of nutritional adequacy, and clinical evaluations of blood pressure, bone mass, and chronic disease. The CSFII focuses on food intake and nutrition knowledge, evaluating not only the nutrient content of the diet but also the specific food items consumed within each food group, where people obtain their foods, and at what times of the day they eat. The data obtained from both studies are critical to the development of intervention programs, and FCS professionals must play an advocacy role in supporting the continued appropriation of funds for this purpose. FCS researchers can contribute to the continuing evaluation of these findings. Data sets from both studies are available at a nominal cost and offer the opportunity to evaluate specific areas of interest such as data collected from particular age, income, or ethnic groups, or individuals residing in a specific geographical region. At the same time, there are many groups who may be at nutritional risk who are not represented in large numbers in national studies. These include ethnic groups such as Vietnamese or Pacific Islanders, children with special medical needs or developmental disabilities, the homebound elderly, persons with low literacy, migrant workers, the homeless, adolescent mothers, and single-parent families. Opportunities to evaluate the food and nutrient intake, nutrition attitudes, and nutrition beliefs of these groups at a local or state level will provide valuable information for nutrition education and intervention.

FCS researchers can explore successful applications of models for behavior change. Teachers, cooperative extension professionals, or program managers in Head Start, school food service, or emergency feeding programs can team with nearby colleges and universities, government agencies, the health sector, or colleagues to implement a research plan for program development and evaluation. Initiatives

arising at the federal level offer new opportunities. FCS professionals with training in foods and nutrition should seek opportunities to be special resource teachers in local TEAM Nutrition schools and work with school food service managers to evaluate behavior change in the school cafeteria. The growing numbers of overweight or eating-disordered children and youth signals the need for FCS researchers to partner with exercise, health, and human development professionals in designing new approaches of both prevention and intervention beginning at the preschool level and moving forward. Nutrition for the athlete and intervention programs that address sports nutrition for school coaches are other school opportunities for FCS professionals. Nickols-Richardson (1999) in a recent review pointed to the nutritional inadequacies among young female gymnasts whose diets are consistently inadequate in kilocalories, calcium, and iron. All of these programs present interdisciplinary opportunities for FCS researchers with different areas of expertise.

FCS researchers need to test and evaluate new methods of program delivery. For isolated rural families, the homebound, or busy working people who do not have time to attend evening or weekend sessions, newsletters, videos, or study-at-home lessons are appropriate. Such materials must recognize individual differences with specific attention to low-literacy populations, individuals whose spoken or written language is not English, or ethnic or cultural groups with distinctive food patterns based on religious or other beliefs. The use of new technology such as distance learning and the Internet as a means of food and nutrition education offers a major opportunity for food and nutrition educators.

Finally, FCS researchers must develop skills as cross-cultural communicators. The culturally competent professional values differences and acts to respect and preserve those differences and avoids imposing the leader's beliefs, practices, or values on others. We need to explore methods of building cross-cultural competence in students and applying that learning to nutrition intervention programs. A further need is to attract diverse minority students to our profession. Ralston, Lamikanra, Weatherspoon, and Musingo (1998) developed a successful mentoring program that both attracted and retained students from minority backgrounds to academic baccalaureate programs in foods and nutritional sciences. Implementation of these methods at other institutions should be a priority.

FOOD PRODUCT DEVELOPMENT AND FOOD SAFETY

New discoveries in food technology and changes in consumer expectations have had sweeping effects on the food products appearing in the marketplace. New techniques in biotechnology, making possible the transfer of genes from one plant strain to another, has led to the successful development of new plant cultivars that are more resistant to pests or spoilage or that have improved flavor, texture, or nutritional value (Institute of Food Technologists Expert Panel, 2000). These advances in plant science and agriculture have resulted in greater agricultural yields and more efficient food production. Long-term benefits or implications for the consumer of bioengineered foods are less well understood.

New Food Ingredients

Efforts by food technologists to develop products that support the health concerns of consumers have dominated the food industry over the past 15 years. The desire of the public to enjoy foods that are low in energy value and assist in weight control, yet are sweet in flavor or possess the tenderness or mouth feel of fat has led to the development of new formulas and experimentation with new food ingredients. Sugar substitutes such as saccharin have been available for many years; however, the taste of these substances, particularly in highly processed foods, limited their use. The discovery of aspartame marketed under the name of Nutrasweet™, led to an expanding list of artificially sweetened products including beverages, candy, and other desserts.

With the health-related emphasis on reducing dietary intakes of total and saturated fats, nutrition and food scientists have examined the use of fat replacers in common food items. Researchers have addressed the sensory qualities, consumer acceptance, and nutritional implications of these fat substitutes. Olestra™, a sucrose polyester that because of its unique chemical configuration cannot be digested, has received the most attention (Giese, 1996). Approved by FDA for use as an oil for frying, a replacement for other fats in dough conditioners, and a flavoring, Olestra™ has been used most frequently in snack foods such as crackers and potato chips. A concern for nutritionists has been the potential of Olestra™ for binding with and preventing the absorption of the fat-soluble vitamins. In current

practice, Olestra™ products are being fortified with fat-soluble vitamins in an effort to overcome this problem.

Other strategies for producing baked products reduced in fat but high in consumer acceptability have used a combination of several fat replacers or high-fructose corn syrup (HFCS). The use of HFCS as a partial replacement for sucrose in ice cream was first considered in the late 1980s when the rising cost of sugar forced food technologists to consider other sweeteners in commercial products. Work at Virginia Polytechnic Institute and State University evaluated the ability of HFCS to tenderize a baked flour mixture, resulting in an acceptable muffin in which the original fat content was reduced by 50% (Conforti, Nee, & Archilla, 2000). Changes in agricultural practices can affect the functional properties of the components in flour mixtures. Changes in fertilization practices resulted in an alteration of the protein and fatty acid content of soft red wheat and its performance in producing an acceptable angel food cake (Conforti, Johnson, & Alley, 1993).

Functional Foods

The concept of functional foods has been embraced eagerly by researchers, educators, food technologists, and health professionals. Efforts by food technologists to find ways of adding new and multifunctional ingredients to food to meet the nutritional demands of consumers have kept pace with the research reports flowing from university and government laboratories that address the health properties of particular food substances. Increased interest in fresh fruits and vegetables and the need to prolong their shelf life has initiated work on the development of edible protein coatings. These coatings, often composed of milk-based proteins, serve as a barrier to prevent the passage of oxygen and thus retard the progression of chemical oxidation reactions that lead to spoilage and loss of quality and nutrients (McHugh & Krochta, 1994).

Soy protein, a protein with an excellent amino acid pattern that even a decade ago was used primarily in animal feeds, is a functional food enjoying new popularity among both consumers and food manufacturers. Soy contains phytochemicals called isoflavones that function as antioxidants and protect against vascular damage, heart attack, and stroke. These properties of soy have been recognized by FDA and approved as a health claim that may be added to the nutrition label of soy-containing foods (Potter, 2000). Soy also contains

phytochemicals that act as phytoestrogens and may help postmenopausal women resist bone loss and osteoporosis. New products incorporating this ingredient range from soy snack bars to yogurt style desserts (Potter, 2000).

Food scientists have directed their attention to both the food content and the bioavailability of other newly discovered phytochemicals. For a phytochemical to be absorbed into the body from the small intestine, it must be broken away from its food component. The bioavailability or level of absorption of particular phytochemicals and the conditions that increase or decrease bioavailability are current areas of active investigation. An example of this work is the study of the lycopenes, a group of carotenoids that are found in tomatoes and are associated with reduced risk of prostate and other cancers. Controlled feeding studies with human participants indicated that lycopenes are more easily absorbed by the body when provided in tomato products that have been subjected to heat treatment, which helps to release them from the plant tissues (FNB, 2000). Lycopenes also are better absorbed in tomato products such as sauces that contain oil, because these carotenoids are fat-soluble and absorbed by the same process as the fat-soluble vitamins (Gartner, Stahl, & Sies, 1997). The attention to lycopene has provided food manufacturers with new opportunities for marketing the tomato sauces that now appear on grocery shelves, developed for use with pasta or on pizza. Other interests of food researchers have included the addition of known vitamins and antioxidants to ready-to-eat cereals, liquid meal replacements, or dairy products such as smoothies that are not subject to standards of identity (Elliott, 1999).

Food Products for the Elderly

The aging of the population in the United States and worldwide offers new markets for foods that are easy to chew and swallow, easy to prepare, and nutrient-dense (Hollingsworth, 1999). The addition of calcium to orange juice to improve bone health and reduce the risk of osteoporosis is but one of the innovations by food researchers to meet the demands of health-oriented younger and older adults. Older people as they age sometimes develop problems with swallowing because nerve and muscle coordination declines in all body systems as a consequence of the aging process. Disease conditions such as diabetes mellitus, Parkinsonism, or senile dementia of the Alzheimer type that accelerate the deterioration of the nervous system can add to

swallowing difficulties. Thin liquids are especially difficult to manage when swallowing becomes more difficult, and fear of choking can limit the older person's intake of food. Thus, the viscosity or thickness of food liquids becomes important. The continuing development of suitable food products and improved tasteless thickening agents (Lee, Takahashi, & Pruitt, 1992) will be a cornerstone in making available appropriate and acceptable foods for those elderly with specialized needs. The dramatic increase projected in the oldest-old population (persons age 85 and over) (National Center for Health Statistics, 1999) adds urgency to the development of nutrient-dense foods that will support independent living in those older persons with some degree of physical disability. Not only will testing for nutritional and sensory quality be important, it will also be necessary to ensure that such food packages are easy to open, that preparation directions are in large print, and that preparation methods require only limited physical dexterity.

Food Preparation Methods and Nutrient Content

Greater attention to health has led to research projects evaluating cooking and processing methods and their effect on both nutrient content and sensory quality, but more are needed. Studies of vegetables prepared by boiling, steaming, boiling in a bag, or microwaving found that boiled vegetables retained less of their vitamin content than those boiled in a bag, microwaved, or steamed, although evaluation of sensory qualities found no consistent preference by consumer taste panels (Johnson & Driskell, 1987). A survey of residents of Nebraska in the mid 1990s (Lewis et al., 1994) indicated that more than twice the number of consumers cooked vegetables on the stove top as compared with the number using the microwave oven, despite the fact that microwave cooking is more effective in conserving nutrients.

Comparisons of conventional versus microwave oven cookery of varieties of white fish reported no difference in the thiamin content by either method (Brady, Haughey, & Rothchild, 1985); in a comparison of cod and trout (Johansson, Ruderus, & Beilby, 1992), the internal cooking temperature, 55° C (130° F) as compared to 75° C (167° F), rather than the type of oven, determined sensory quality. In recent years, new technology has improved both the power and performance of microwave ovens. The effect of microwave cooking on the

bioavailability of important phytochemicals such as the carotenoids requires attention.

Agricultural and Production Practices and Consumer Attitudes

As we continue to encourage greater use of plant foods, consumer health concerns regarding the effect of agricultural practices have been a topic of study by FCS researchers. New and emerging pathogens have focused attention on the potential benefits of irradiation as a method of ensuring food safety. It is increasingly important that we ascertain how consumers perceive both the safety of these practices and the motivating factors promoting their use.

Pesticide Treatment

FCS researchers at Washington State (Dittus & Hillers, 1996) have described consumer perceptions regarding possible pesticide dangers arising from eating fresh produce and their response. The Health Belief Model (Dittus & Hillers, 1996) was used to evaluate consumer perceptions of nutritional benefit versus pesticide risk related to use of fruits and vegetables. The survey participants with high concern about good nutrition also had high concern about risk from pesticides and took the greatest precautions to minimize their pesticide risk by washing or peeling fruits. As would be expected, those individuals who perceived a high risk of developing a cancer were more likely to eat fruits and vegetables to minimize their cancer risk, regardless of pesticide concerns. Individuals with low concern about their health were less likely to consume fruits and vegetables or exhibit protective behavior regarding pesticides. Stringer and Thomson (1998) evaluated fruit and vegetable buying practices among minority consumers in southeastern Pennsylvania. They found that more than one fourth of supermarket shoppers were interested in knowing where their produce was grown and the pesticides and chemicals used in its production. Others have found the healthfulness of the food supply to be a motivator for consumers choosing to purchase organic foods (Swanson & Lewis, 1993).

Food Irradiation

Sustaining consumer confidence in a safe food supply requires continuing research on the cost-benefit aspects of food treatments and

the education of consumers regarding the findings. An example of such a treatment is food irradiation. There continue to be health-related benefits worldwide from the use of irradiation to eliminate bacterial growth (Loaharanu, 1994). Discontinuation of chemical fumigation in the early 1990s brought about the use of irradiation treatment to ensure the purity of food ingredients. Increased consumer interest in exotic foods made with spices imported from developing countries has magnified the need for an effective and inexpensive method of ensuring food safety. The Center for Disease Control estimated that salmonella contamination of poultry costs the U.S. economy \$2,540 million annually, a cost that could be reduced significantly through the use of irradiation (Loaharanu, 1994). The need for adequate and appropriate public education on the safety and effectiveness of irradiation as a food processing technique remains an unmet need.

New and Emerging Pathogens

Continued surveillance of the food supply is crucial to ensuring the safety of food prepared and consumed both at home and away. Recent reports of new and emerging pathogens have led to new FDA recommendations for appropriate food preparation and food processing.

Escherichia coli O157

One of the most dangerous of the new pathogens is *Escherichia coli* O157, discovered in 1982 (Mermelstein, 1993). Sometimes referred to as the renegade *E. coli* because it does not act like the other *E. coli* strains, being harder to detect and more difficult to destroy, *E. coli* O157 produces a toxin that causes a severe and potentially fatal illness called hemorrhagic colitis. In children, infection with *E. coli* O157 can result in kidney failure and damage to the central nervous system. An outbreak of food poisoning traced to hamburger that was contaminated with *E. coli* O157 and not thoroughly cooked resulted in new research and regulatory action by government agencies. Based on this event, it was recommended that food-service providers cook ground meat to an internal temperature of 71° C (160°F); the middle should be gray or brown, and juices should run clear (FDA, 1999). New methods for rapid assessment were developed to enable meat producers and processors to determine the presence of *E. coli* O157 on beef carcasses prior to processing.

The discovery of *E. coli* O157 in fruit juice prepared from fruit that became contaminated with this bacteria when it touched the ground (Kozempel, Mcaloon, & Yee, 1998), resulted in changes in the 1999 Food Code (FDA, 1999). It is now recommended that juices to be served to vulnerable population groups, including the very young, the very old, and immune-compromised individuals, be pasteurized to kill any *E. coli* O157 that may be present.

Listeria monocytogenes

New strains of *Listeria monocytogenes* have entered the food chain. Outbreaks of food-related illness have been traced to consumption of Mexican cheeses and other soft cheeses, prepared salads, and poultry products contaminated with *Listeria monocytogenes*. This pathogen is especially dangerous for pregnant women, children, and the elderly. As a result, food processors have adopted new methods for avoiding bacterial contamination in their industry (Food Safety and Inspection Service, 1999). A major topic of research and training in both food processing and food service facilities in recent years has been the Hazard Analysis Critical Control Point system (HACCP) (FDA, 1999). The HACCP process allows food producers or vendors to determine where in their system of production or service that contamination or spoilage is most likely to take place and what precautions such as appropriate temperatures are most critical. HACCP provides a model for intervention before a problem occurs.

Food Safety Education

A major consumer education initiative of USDA over the past decade has been food safety in the home. A survey completed in 1985 by researchers at Oregon State University (Woodburn & Van De Riet, 1985) reported that homemakers were unaware of many common food hazards. These included the cross-contamination of raw and cooked foods, holding cooked foods at room temperature for more than 2 hours, and inadequate reheating of foods held at vulnerable temperatures. Those homemakers cited food labels as a convenient way to receive food information. It is noteworthy that current labels on fresh meat, fish, and poultry stress the importance of proper holding and cooking temperatures and of washing utensils or equipment that come into contact with these foods when raw. Also, both the FDA and the USDA have developed written materials for consumers that

are easily read and understood along with attractive and user-friendly Web sites.

State extension units have increased their public education efforts in the area of food safety to build awareness of these dangers. In fact, in one state, 31% of the participants in FCS extension programs named Cooperative Extension as their major source of food safety information (Nies & Gentry Van Laanen, 1995). In Washington State (Hillers, Penaranda, & Jennings, 1989), trained volunteers were used successfully to promote safe food preservation practices. In one year, the 372 volunteers in the Master Food Preserver Program provided services valued at \$60,000 above the cost of their training. Outcome assessment of cooperative extension food safety programs in Texas (Nies & Gentry Van Laanen, 1995) revealed significant changes in food behavior, with adults reporting hand washing before preparing food or after handling meat, thawing food in the refrigerator, and using a thermometer when roasting meat.

Implications for Future Research in Food Product Development and Food Safety

Confidence of consumers in the safety and adequacy of the food supply is vital for the well-being of families. Public information programs that provide consumers with an understanding of common agricultural practices and their long-term safety have been limited. As a result, consumers are becoming increasingly wary of the impact of biotechnology on their health and the health of their families (Nestle, 1998a). FCS educators must take a leadership role in developing information programs and materials to help consumers acquire an understanding of these issues and make informed decisions. FCS researchers working in the community have the opportunity to evaluate consumer attitudes and informational needs regarding biotechnology and the food supply. Such formative evaluation can serve as a base for the development of educational programs and the testing of their effectiveness.

Although written and Web-based materials have been developed by federal agencies to address food safety issues with special attention given to both children and the elderly, many vulnerable individuals are not reached. These include persons with a low reading level, populations fluent in a language other than English or Spanish, or individuals lacking computer access. Assessment demonstrating behavior change following a food safety education program targeted

to one of the above groups will serve to reinforce appropriate information and methods for special-needs groups. Also, there has been no assessment of the cost-effectiveness of Web-based food safety programs. Because more families have home computers and community facilities such as libraries and cooperative extension offices offer Internet access, continued development of Web-based programs and evaluation of the effectiveness of this media with various age groups grows in importance.

Food product development, emphasizing increased levels of nutrients and decreased amounts of fat and sugar, can be a collaborative effort of both university and food industry researchers. Although proprietary considerations limit the dissemination of some formulations developed by FCS researchers employed in the food industry, professionals in food industry can support university research by making available new FDA-approved additives or materials such as fat replacers for recipe development. University researchers can evaluate the sensory characteristics or nutritional contribution of such products. As biotechnology continues to focus on the development of new plant varieties, FCS researchers must be collaborative partners in evaluating the impact of these changes on food preparation and recipe formulation in both home and industry. The nutritional implications of such substitutions also require continued assessment.

As new ingredients become available for home food preparation, the unique background in food preparation skills held by FCS professionals will support appropriate testing under home conditions. As new home appliances become available, the sensory and nutritional characteristics of food prepared using these appliances will need to be evaluated and the results made known to potential consumers. As lifestyles continue to change, ongoing market research that addresses new food needs of consumers as related to shelf life, nutrient content, or preparation methods will be important areas for FCS researchers.

Consumers continue to require information and assistance with food preparation. FCS researchers and educators can work together to develop, implement, and evaluate new teaching methods or media that increase the use of cooking methods that will improve nutrient retention, such as microwave cooking of vegetables, or the substitution of ingredients to limit fat, sugar, or caloric content. As interest in ethnic cooking continues to grow, FCS professionals with skills in recipe development and presentation should take the initiative in preparing nutritionally appropriate and aesthetically pleasing publications.

Finally, the aging of the population will present new challenges for both caregivers and food technologists. Food is paramount to one's quality of life. The participation of an FCS professional will be central to the development of food products with high nutrient content, long shelf life, and appropriate texture that also will meet the older individual's expectations for flavor and cultural specificity.

PROMOTING RESEARCH IN FOODS, NUTRITION, AND HEALTH

There are broad and expanding needs for research in the areas of nutrition science, food science, nutrition policy, and food behavior and intervention that demand the attention of family and consumer scientists. We must continue to recruit both FCS students and FCS professionals to undertake this important work, and several steps could support this goal.

1. Undergraduate programs in FCS must both encourage and make available to students opportunities to participate in foods and nutrition research. Providing the opportunity for students to learn more about research methods and evaluation through a seminar course can stimulate their interest in undergraduate research projects. Such projects may be individual learning experiences or a segment of a larger faculty research project.
2. Make available through Web-based instruction or distance learning short courses for obtaining the necessary background and certification for working with human research participants. Federal law requires all colleges, universities, and other research agencies to have in place an institutional review board for the protection of human subjects and a mechanism for training principal investigators in the appropriate methods for ensuring the informed consent, the personal privacy, and the personal safety of all research participants. FCS professionals working in schools, Cooperative Extension, Head Start, or other community agencies have many opportunities to develop meaningful research with their clients. Nearby colleges or universities with active research programs need to cooperate in making available the appropriate training.
3. Make available through Web-based instruction or distance learning, graduate courses in research methodology and evaluation. Such opportunities may encourage enrollment in advanced degree programs or promote greater research opportunities for the working professional.
4. Actively recruit both undergraduate students and working professionals with research capabilities to advanced degree programs in

foods and nutrition. Financial aid packages as well as new modes of instructional delivery will enhance the attractiveness of graduate study.

5. Strongly encourage our food and nutrition researchers to publish in FCS journals. At present, the work accomplished by foods and nutrition researchers, even in departments affiliated with FCS programs, often is published in specialized journals in nutrition, dietetics, nutrition education, or food science, rather than in FCS journals. Individuals chairing foods and nutrition departments may have been trained in biology, biochemistry, agriculture, or in human nutrition programs in the health sciences, with limited contact with FCS journals; thus, they encourage their faculty to publish elsewhere. Presently, FCS journals are not indexed on AGRICOLA, the foods, nutrition, and agriculture database of USDA used by many foods and nutrition professionals. Listing the foods and nutrition articles published in FCS journals on AGRICOLA would provide worldwide visibility to peers and might encourage greater use of our journals.
6. Promote effective mentoring systems by which young FCS faculty can develop skills in research development and preparation of research proposals that will be competitive for resources within academic institutions, government agencies, and other research funding groups.

REFERENCES

- Abusabha, R., Achterberg, C., McKenzie, J., & Torres, D. (1998). Evaluation of nutrition education in WIC. *Journal of Family and Consumer Sciences, 90*, 98-104.
- Alberts, D. S., Martinez, M. E., Roe, D. J., Guillen-Rodriguez, J. M., Marshall, J. R., van Leeuwen, B., Reid, M. E., Ritenbaugh, C., Vargas, P. A., Bhattacharyya, A. B., Earnest, D. L., & Sampliner, R. E. (2000). Lack of effect of a high-fiber cereal supplement on the recurrence of colorectal adenomas. *New England Journal of Medicine, 342*, 1156-1162.
- Anliker, J., Bell, L., Miller, C., Harkins, M., Gabor, V., & Barklett, L. (2000). *Food stamp nutrition education study*. Final Report. Prepared for the U.S. Department of Agriculture. Washington: Health Systems Research.
- Armstrong, J. E., & Butkus, S. (1992). Evaluating EFNEP audience change through attrition patterns. *Home Economics Research Journal, 20*, 199-206.
- Armstrong, J. E., Gilliam, J., & Stem, D. (1992). Behaviors to reduce dietary fat and related factors in the over-45 population. *Home Economics Research Journal, 20*, 207-218.
- Armstrong, J. E., Lange, E., & Stem, D. (1991). Convenience as a factor in meal preparation among health-conscious adults. *Home Economics Research Journal, 19*, 224-232.
- Arnold, C. G., & Sobal, J. (2000). Food practices and nutrition knowledge after graduation from the Expanded Food and Nutrition Education Program (EFNEP). *Journal of Nutrition Education, 32*, 130-138.
- Auld, G. W., & Morris, M. (1994). Infant/toddler feeding practices of adolescent mothers: Ethnic differences and intergenerational involvement. *Family and Consumer Sciences Research Journal, 23*, 118-134.

- Auld G. W., Nitzke, S. A., McNulty, J., Bock, M. A., Bruhn, C. M., Gabel, K., Lauritzen, G., Lee, Y. F., Medeiros, D., Newman, R., Ortiz, M., Read, M., Schutz, H., & Sheehan, E. (1998). A stage-of-change classification system based on actions and beliefs regarding dietary fat and fiber. *American Journal of Health Promotion, 12*, 192-201.
- Auld, G. W., Romaniello, C., Heimendinger, J., Hambidge, C., & Hambidge, M. (1999). Outcomes from a school-based nutrition education program alternating special resource teachers and classroom teachers. *Journal of School Health, 69*, 403-408.
- Axelsson, M. L., Brinberg, D., & Alloen, C. (1986). Robustness of Fishbein's theory of reasoned action in predicting food-related behavior. *Home Economics Research Journal, 15*, 52-56.
- Bloch, G. (1991). Epidemiologic evidence regarding vitamin C and cancer. *American Journal of Clinical Nutrition, 54*, 1310S-1314S.
- Bollella, M. C., Spark, A., Boccia, L. A., Nicklas, T. A., Pittman, B. P., & Williams, C. L. (1999). Nutrient intake of Head Start children: Home vs. school. *Journal of the American College of Nutrition, 18*, 108-114.
- Bowens, J., Cox, R. H., Pratt, C., & Gaylord, C. (1995). Development of a food practice checklist for use with low-literacy homemakers in EFNEP. *Journal of Family and Consumer Sciences, 87*, 35-42.
- Bowering, J., & Wynn, R. L. (1986). Nutritional status of preschool children from intact and divorced families. *Home Economics Research Journal, 15*, 132-140.
- Brady, P. L., Haughey, P. E., & Rothchild, M. F. (1985). Microwave and conventional heating effects on sensory quality and thiamin content of flounder and haddock filets. *Home Economics Research Journal, 14*, 236-240.
- Brink, M. S. (2000). *Expanded food and nutrition education program: A precedent-setting program*. Cortland, NY: EasyWriter Publications.
- Brown, J. L., Adams, P. A., Sims, L. S., & Kaltreider, D. L. (1988). Characteristics of extension's food and nutrition programming: A content analysis of plans of work. *Home Economics Research Journal, 16*, 255-266.
- Brown, J. L., & Kiernan, N. E. (1998). Using formative evaluation to improve an osteoporosis prevention program. *Journal of Family and Consumer Sciences, 90*, 23-29.
- Burghardt, J. A. (1995). School nutrition assessment study: Overview of the study design. *American Journal of Clinical Nutrition, 61*, 182S-186S.
- Byrd-Bredbenner, C., Alfieri, L., Wong, A., & Cottee, P. (2001). The inherent educational qualities of nutrition labels. *Family and Consumer Sciences Research Journal, 29*, 265-280.
- Campbell, M. K., Symons, M., Demark-Wahnefried, W., Polhamus, B., Bernhardt, J. M., McClelland, J. W., & Washington, C. (1998). Stages of change and psychosocial correlates of fruit and vegetable consumption among rural African American church members. *American Journal of Health Promotion, 12*, 185-191.
- Carruth, B. R., & Skinner, J. D. (1992). What do pregnant adolescents believe about nutrition during pregnancy. *Home Economics Research Journal, 21*, 22-33.
- Conforti, F. D., Johnson, J. M., & Alley, M. (1993). The effects of nitrogen fertilization and chlorination on the protein and fatty acid contents of soft red winter wheat flour, and their influence on the baking quality of angel food cake. *Journal of Cereal Science, 18*, 187-195.
- Conforti, F. D., Nee, P., & Archilla, L. (2000). The synergistic effects of maltodextrin and high-fructose corn sweetener 90 in a fat-reduced muffin. *Journal of Consumer Studies and Home Economics, 22*, 138-143.

- Cotugna, N., & Vickery, C. E. (1992). Using USDA food plans and food cost inventories in dietetic education. *Journal of Home Economics, 84*, 60-63.
- Coulston, A. M. (1998). Obesity as an epidemic: Facing the challenge. *Journal of the American Dietetic Association, 98* (Suppl. 2), S6.
- Crockett, S. J., Bennett, C.M., & Brown, G. (1990). Wellness in the home economics curriculum. *Journal of Home Economics, 82*, 21-25.
- Dittus, K. L., & Hillers, V. N. (1996). Attitudes about the nutritional benefits and pesticide-exposure risks from fruit and vegetable consumption. *Family and Consumer Sciences Research Journal, 24*, 406-421.
- Doong, J. Y., Shariff, Z. M., Hoerr, S.L.M., Bond, J. T., & Hartgerink, T. (1998). Growth status of low-income preschool children and the relation of birth weight to short stature and overweight. *Journal of Family and Consumer Sciences, 90*, 12-19.
- Dunn, P. C., Lackey, C., Kolasa, K., & Mustian, D. (1998). At-home nutrition education for parents and 5- to 8-year-old children: The HomePlate pilot study. *Journal of the American Dietetic Association, 98*, 807-809.
- Elliott, J. G. (1999). Application of antioxidant vitamins in foods and beverages. *Food Technology, 59*, 46-48.
- Feskanich, D., Weber, P., Willett, W. C., Rockett, H., Booth, S. L., & Colditz, G. A. (1999). Vitamin K intake and hip fractures in women: A prospective study. *American Journal of Clinical Nutrition, 69*, 74-79.
- Flaten, H., Hostmark, A. T., & Kierulf, P. (1990). Fish-oil concentrate: Effects on variables related to cardiovascular disease. *American Journal of Clinical Nutrition, 52*, 300-306.
- Food and Drug Administration. (1996). Food standards: Amendment of standards of identity for enriched grain products to require addition of folic acid. Final rule. *Federal Register, 61*(44), 21.
- Food and Drug Administration. (1999). *1999 Food Code*. Washington, DC: Author.
- Food and Nutrition Board. (1989). *Recommended dietary allowances*. (10th ed.). Washington, DC: National Academy Press.
- Food and Nutrition Board. (1997). *Dietary reference intakes: Calcium, phosphorus, magnesium, vitamin D and fluoride*. Washington, DC: National Academy Press.
- Food and Nutrition Board. (1998). *Dietary reference intakes for thiamin, riboflavin, niacin, vitamin B6, folate, vitamin B12, pantothenic acid, biotin, and choline*. Washington, DC: National Academy Press.
- Food and Nutrition Board, National Research Council. (2000). *Dietary reference intakes for vitamin C, vitamin E, selenium, and carotenoids*. Washington, DC: National Academy Press.
- Food Safety and Inspection Service. (1999). *FSIS action plan for addressing Listeria monocytogenes*. Washington: U.S. Department of Agriculture.
- Gartner, C., Stahl, W., & Sies, H. (1997). Lycopene is more bioavailable from tomato paste than from fresh tomatoes. *American Journal of Clinical Nutrition, 66*, 116-122.
- Geiger, C. J., Wyse, B. W., Parent, C.R.M., & Hansen, R. G. (1991). Review of nutrition labeling formats. *Journal of the American Dietetic Association, 91*, 808-812.
- Giесе, J. (1996). Olestra: Properties, regulatory concerns, and applications. *Food Technology, 50*, 130-131.
- Girouard, K. J., Hunt, A., Pope, J., & Tolman, N. M. (1997). Consumption of low-fat products by adults. *Journal of Family and Consumer Sciences, 89*, 55-57.

- Gordon, A. R., Devaney, B. L., & Burghardt, J. A. (1995). Dietary effects of the National School Lunch Program and the School Breakfast Program. *American Journal of Clinical Nutrition*, 61(Suppl. 1), 221S-231S.
- Green, J., McIntosh, M., & Wilson, A. (1991). Changes in nutrition knowledge scores and calcium intake in female adolescents. *Home Economics Research Journal*, 19, 207-214.
- Greene, G. W., Rossi, S. R., Reed, G. R., Willey, S., & Prochaska, J. O. (1994). Stages of change for reducing dietary fat to 30% of energy or less. *Journal of the American Dietetic Association*, 94, 1105-1112.
- Hartman, T. J., McCarthy, P. R., Park, R. J., Schuster, E., & Kushi, L. H. (1994). Focus responses of potential participants in a nutrition education program for individuals with limited literacy skills. *Journal of the American Dietetic Association*, 94, 744-748.
- Havas, S., Anliker, J., Damron, D., Langenberg, P., Ballesteros, M., & Feldman, R. (1998). Final results of the Maryland WIC 5-A-Day Promotion Program. *American Journal of Public Health*, 88, 1161-1167.
- Head, M. K., & Stuhldreher, W. L. (1998). Cross-cultural dietary patterns: A college course on ethnically diverse eating patterns. *Journal of Family and Consumer Sciences*, 90, 61-65.
- Hertzler, A. A., & Frary, R. B. (1995). College students' nutrition information networks. *Family and Consumer Sciences Research Journal*, 24, 191-202.
- Hertzler, A. A., Frary, R. B., & Ward, C. (1996). Food guide pyramid menus for pre-schoolers - adequacy of selected nutrients. *Journal of Family and Consumer Sciences*, 88, 63-65.
- Hertzler, A. A., Stadler, K. M., Lawrence, R., Alleyne, L. A., Mattioli, L. D., & Majidy, M. (1995). Empowerment: A food guidance process for cross-cultural counseling. *Journal of Family and Consumer Sciences*, 87, 45-50.
- Hilliers, V. N., Penaranda, C. W., & Jennings, G. E. (1989). Utilization of trained volunteers in a food and nutrition education program. *Home Economics Research Journal*, 18, 47-52.
- Hollingsworth, P. (1999). Food priorities for an aging America. *Food Technology*, 53(5), 38-41.
- Honein, M. A., Paulozzi, L. J., Mathews, T. J., Erickson, J. D., & Wong, L. Y. (2001). Impact of folic acid fortification of the US food supply on the occurrence of neural tube defects. *Journal of the American Medical Association*, 285, 2981-2986.
- Hunter, D. J., Manson, J. E., Colditz, G. A., Stampfer, M. J., Rosner, B., Hennekens, C. H., Speizer, F. E., & Willett, W. C. (1993). A prospective study of the intake of vitamins C, E, and A and the risk of breast cancer. *New England Journal of Medicine*, 329, 234-240.
- Institute of Food Technologists Expert Panel. (2000). Report on biotechnology and foods: Benefits and concerns associated with recombinant DNA biotechnology-derived foods. *Food Technology*, 54(10), 61-80.
- Institute of Medicine Subcommittee on Nutritional Status and Weight Gain During Pregnancy. (1990). *Nutrition During Pregnancy. Part I. Weight Gain*. Washington, DC: National Academy Press.
- International Life Sciences Institute, Human Nutrition Institute. (1998). *Dietary Guidelines for Americans focus group study*. Final report. Washington, DC: Author.
- Iowa State University, University Extension. (2001). *An evaluation of the costs and benefits of Iowa's EFNEP*. Ames, IA: Author. Accessed at <http://www.extension.iastate.edu/efnep>.

- Jacobs, D. R., Meyer, K. A., Kushi, L. H., & Folsom, A. R. (1998). Whole-grain intake may reduce the risk of ischemic heart disease death in postmenopausal women: The Iowa Women's Health Study. *American Journal of Clinical Nutrition*, *68*, 248-257.
- Jacques, P. F., Bostom, A. G., Wilson, P. W., Rich, S., Rosenberg, I. H., & Selhub J. (2001). Determinants of plasma total homocysteine concentration in the Framingham Offspring cohort. *American Journal of Clinical Nutrition*, *73*, 613-621.
- Johansson, L., Ruderus, H., & Beilby, R. I. (1992). Optimum internal temperature established by sensory evaluation for fish prepared in conventional and microwave ovens. *Home Economics Research Journal*, *21*, 192-205.
- Johnson, J. M., & Driskell, J. (1987). Vitamin retention and sensory evaluation of selected foods prepared by boiling, boiling-in-bag, and steaming methods. *Home Economics Research Journal*, *16*, 136-142.
- Kennedy, E. T., Bowman, S. A., and Powell, R. (1999). Dietary fat intake in the US population. *Journal of the American College of Nutrition*, *18*, 207-212.
- Kennedy, E. T., Bowman, S. A., Spence, J. T., Freedman, M., & King, J. (2001). Popular diets: Correlation to health, nutrition, and obesity. *Journal of the American Dietetic Association*, *101*, 411-420.
- Kozempel, M., Mcaloon, A., & Yee, W. (1998). The cost of pasteurizing apple cider. *Food Technology*, *52*, 50-55.
- Kris-Etherton, P. M., Derr, J., & Mitchell, D. (1993). The role of fatty acid saturation on plasma lipids, lipoproteins, and apolipoproteins. *Metabolism*, *42*(1), 121-129.
- Kushi, L. H., Lenart, E. B., & Willett, W. C. (1995). Health implications of Mediterranean diets in light of contemporary knowledge. Part 2. Meat, wine, fats, and oils. *American Journal of Clinical Nutrition*, *61*(Suppl.), 1416S-1421S.
- Lambur, M., Rajgopal, R., Lewis, E., Cox, R., & Ellerbrock, M. (2001). Applying cost benefit analysis to nutrition education programs: Focus on the Virginia expanded food and nutrition education program. Blacksburg, VA: Virginia Cooperative Extension. Accessed at <http://www.reeusda.gov/f4hn/efnep/cbasheet.pdf>
- Lee, W. E., Takahashi, K., & Pruitt, J. S. (1992). Temporal aspects of the oral processing of viscous solutions. *Food Technology*, *46*, 106-113.
- Leidenfrost, N. B. (2000). EFNEP's beginning and the first 20 years: A historical perspective. *Journal of Family and Consumer Sciences*, *92*, 37-44.
- Lewis, C. J., Crane, N. T., Wilson, D. B., & Yetley, E. A. (1999). Estimated folate intakes: Data updated to reflect food fortification, increased bioavailability, and dietary supplement use. *American Journal of Clinical Nutrition*, *70*, 198-207.
- Lewis, N. M., Albrecht, J. A., Schnepf, M. I., Hamouz, F. L., Driskell, J. A., & Goertz, J. A. (1994). Vegetable choices and cookery methods of Nebraskans. *Home Economics Research Journal*, *22*, 286-295.
- Lewis, N. M., Filips, J., & Waltz-Hill, M. M. (1999). Nutritional assessment of breast cancer risk in young women. *Journal of Family and Consumer Sciences*, *91*, 93-98.
- Life Sciences Research Office, Federation of American Societies for Experimental Biology. (1995). *Third Report on Nutrition Monitoring in the United States*. (Vol. 1 & 2). Washington, DC: U.S. Government Printing Office.
- Loaharanu, P. (1994). Cost/benefit aspects of food irradiation. *Food Technology*, *48*, 104-108.
- Ma, J., Hampl, J. S., & Betts, N. M. (2000). Antioxidant intakes and smoking status: Data from the Continuing Survey of Food Intakes by Individuals 1994-1996. *American Journal of Clinical Nutrition*, *71*, 774-780.

- McComber, D. R., & Postel, R. T. (1992). The role of ethnic foods in the food and nutrition curriculum. *Journal of Home Economics, 84*, 52-54.
- McHugh, T. H., & Krochta, J. M. (1994). Milk-protein-based edible films and coatings. *Food Technology, 48*, 97-103.
- Mermelstein, N.H. (1993). Controlling *E. coli* O157:H7 in meat. *Food Technology, 47*, 90-91.
- Mertz, W. (2000). Three decades of dietary recommendations. *Nutrition Reviews, 58*, 324-331.
- Milner, J. (2000). Functional foods: The US perspective. *American Journal of Clinical Nutrition, 71*(Suppl.), 1654S-1659S.
- Monsen, E. R. (1992). *Research: Successful approaches*. Chicago: American Dietetic Association.
- Montgomery, D. L., & Splett, P. L. (1997). Economic benefit of breast-feeding infants enrolled in WIC. *Journal of the American Dietetic Association, 97*, 379-385.
- Morgan, K., Peterkin, B. B., Johnson, S. R., & Goungetas, B. (1986). Food usage patterns as related to nutritional quality of household food supplies. *Home Economics Research Journal, 15*, 148-156.
- Mtika, A., & Armstrong, J. E. (1997). Issues in the cultural competency of Head Start's food and nutrition services. *Journal of Family and Consumer Sciences, 89*, 41-45.
- National Center for Health Statistics. (1999). *Health, United States, 1999 with health and aging chartbook*. Hyattsville, MD: U.S. Government Printing Office.
- National Research Council. (1989). *Diet and health: Implications for reducing chronic disease risk*. Washington, DC: National Academy Press.
- Nestle, M. (1998a). Food biotechnology: Labeling will benefit industry as well as consumers. *Nutrition Today, 33*, 6-123.
- Nestle, M. (1998b). In defense of the food guide pyramid. *Nutrition Today, 33*, 189-197.
- Nickols-Richardson, S. M. (1999). Dietary intake in young female gymnasts: A summary. *Journal of Family and Consumer Sciences, 91*, 71-75.
- Nies, J. L., & Gentry Van Laanen, P. (1995) Effect of safe food handling programming on participants' food handling behaviors. *Family and Consumer Sciences Research Journal, 24*, 161-179.
- Norman, A. W. (1998). Sunlight, season, skin pigmentation, vitamin D, and 25-hydroxyvitamin D: Integral components of the vitamin D endocrine system. *American Journal of Clinical Nutrition, 67*, 1108-1111.
- Nutrition Labeling and Education Act of 1990. Public Law No. 101-535, 104 Statute 2353.
- Owen, A. L., & Owen, G. M. (1997). Twenty years of WIC: A review of some effects of the program. *Journal of the American Dietetic Association, 97*, 777-782.
- Patterson, R. E., Kristal, A. R., & White, E. (1996). Do beliefs, knowledge, and perceived norms about diet and cancer predict dietary change? *American Journal of Public Health, 86*, 1394-1400.
- Perez-Escamilla, R., Ferris, A. M., Drake, L., Haldeman, L., Peranick, J., Campbell, M., Peng, Y. K., Burke, G., & Bernstein, B. (2000). Food stamps are associated with food security and dietary intake of inner-city preschoolers from Hartford, Connecticut. *Journal of Nutrition, 130*, 2711-2717.
- Peterson, S., Kris-Etherton, P. M., & Sigman-Grant, M. (1994). Perceived barriers to family implementation of a low-fat diet. *Journal of Home Economics, 86*, 5-12.
- Potter, S. M. (2000). Soy: New healthy benefits associated with an ancient food. *Nutrition Today, 35*(2), 53-60.

- Pratt, C., & Howze, E. (1990). Promoting fitness: Behavior, knowledge, and confidence of extension home economists. *Home Economics Research Journal, 18*, 345-351.
- Quaker Oats Company. (1997). Petition for health claims: form labeling: health claims; soluble fiber from whole oats and risk of coronary heart disease. *Federal Register, 62*, 15343-15344.
- Raab, C. A., Holyoak, A., & Raff, L. G. (1988). Bridging the hunger gap. *Journal of Home Economics, 80*, 3-8.
- Ralston, P. A., Lamikanra, V. T., Weatherspoon, L. J., & Musingo, M. (1998). Mentoring minority students for the food and nutritional sciences. A cooperative program. *Journal of Family and Consumer Sciences, 90*, 50-55.
- Reichler, G., & Dalton, S. (1998). Chef's attitudes toward healthful food preparation are more positive than their food science knowledge and practices. *Journal of the American Dietetic Association, 98*, 165-169.
- Rosenberg, I. H., & Rosenberg, L. E. (1998). The implications of genetic diversity for nutrient requirements: The case of folate. *Nutrition Reviews, 56*, S47-S53.
- Rudd, J. (1986). Aiding consumer nutrition decisions with the simple graphic label format. *Home Economics Research Journal, 14*, 342-346.
- Ryan, A. S. (1997). Resurgence of breastfeeding in the United States. *Pediatrics, 99*, E12.
- Schatzkin, A., Lanza, E., Corle, D., Lance, P., Iber, F., Caan, B., Shike, M., Weissfeld, J., Burt, R., Cooper, M. R., Kikendall, J. W., & Cahill, J. (2000). Lack of effect of a low-fat, high-fiber diet on the recurrence of colorectal adenomas. *New England Journal of Medicine, 342*, 1149-1155.
- Scholl, T. O., Hediger, M. L., Schall, J. I., Khoo, C. S., & Fischer, R. I. (1996). Dietary and serum folate: Their influence on the outcome of pregnancy. *American Journal of Clinical Nutrition, 63*, 520-525.
- Shaw, A. M., Escobar, A. J., & Davis, C. A. (2000). Reassessing the Food Guide Pyramid: Decision-making framework. *Journal of Nutrition Education, 32*, 111-118.
- Stringer, S. B., & Thomson, J. S. (1998). Demographic data and fresh fruit and vegetable purchasing preferences of minority consumers in southeastern Pennsylvania. *Journal of Family and Consumer Sciences, 90*, 18-22.
- Swanson, R. B., & Birkliid, C. A. (1992). Readability of recommended nutrition sources. *Home Economics Research Journal, 20*, 187-197.
- Swanson, R. B., & Lewis, C. E. (1993). Alaskan direct-market consumers: Perception of organic produce. *Home Economics Research Journal, 22*, 138-155.
- Taper, L. J., Frigge, C., & Rogers, C. S. (1991). Paternal child-feeding attitudes and obesity in school-age sons. *Home Economics Research Journal, 19*, 215-223.
- Taylor, T., Serrano, E., Anderson, J., & Kendall, P. (2000). Knowledge, skills, and behavior improvements on peer educators and low-income Hispanic participants after a stage of change-based bilingual nutrition education program. *Journal of Community Health, 25*, 241-262.
- Taylor-Davis, S., Smicklas-Wright, H., Warland, R., Achterberg, C., Jensen, G. L., Sayer, A., & Shannon, B. (2000). Responses of older adults to theory-based nutrition newsletters. *Journal of the American Dietetic Association, 100*, 656-664.
- Thomsen, P. A., Terry, R. D., & Amos, R. J. (1988). Nutrition information sources used by adolescents. *Home Economics Research Journal, 16*, 215-221.
- Trenker, L. L., & Achterberg, C. L. (1991). Use of focus groups in evaluating nutrition education activities. *Journal of the American Dietetic Association, 91*, 1577-1581.

- University of Tennessee Agricultural Extension Service. (1998). *A cost-benefit analysis of the Tennessee expanded food and nutrition education program*. Knoxville, TN: Author. Accessed at <http://www.reeusda.gov/f4hn/efnep/tncba2.pdf>
- U.S. Department of Agriculture. (1979). *The hassle-free guide to a better diet*, (Leaflet No. 567). Washington, DC: Author.
- U.S. Department of Agriculture. (2000). *The story of team nutrition: Executive summary of the pilot study*. Final Report. Washington, DC: Office of Analysis, Nutrition, and Evaluation.
- U.S. Department of Agriculture. (2001). *School meals initiative implementation study: First year report*. Washington, DC: Office of Analysis, Nutrition, & Evaluation.
- U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. (2001). Web Site for accessing the USDA Food Guide Pyramid, ethnic and cultural Food Guide Pyramids, and special audience Food Guide Pyramids, <http://www.usda.gov/cnpp>
- U.S. Department of Agriculture, Food and Nutrition Service. (2001). *Children's diets in the mid-1990's: Dietary intake and its relationship with school meal participation*. Washington: Office of Analysis, Nutrition, & Evaluation. Accessed at <http://www.fns.usda.gov/oane/MENU/Published/CNP/FILES/ChilDietsum.htm>
- U.S. Department of Agriculture, and U.S. Department of Health and Human Services. (2000). *Nutrition and your health: Dietary guidelines for Americans*. (5th ed.). Washington, DC: Author.
- U.S. Department of Health and Human Services. (1988). *The Surgeon General's report on nutrition and health*. (DHHS [PHS] Pub. No. 88-502010). Washington, DC: U.S. Government Printing Office.
- U.S. Department of Health and Human Services, and U.S. Department of Agriculture. (1993). *Ten-year comprehensive plan for the national nutrition monitoring and related research program*. Federal Register, 58, 32752-32806.
- U.S. Department of Health and Human Services, Commission on Dietary Supplement Labels. (1997). *Report of the Commission on Dietary Supplement Labels*. Washington, DC: Author.
- Volker, C. B., & Winter, M. (1989). Primary household production of food, food expenditures, and reported adequacy of food. *Home Economics Research Journal*, 18, 32-46.
- Walter, J. M., & Soliah, L. A. (1997). Using the food guide pyramid to identify dietary fat content. *Journal of Family and Consumer Sciences*, 89, 58-61.
- Welsh, S., Davis, C., & Shaw, A. (1992). Development of the Food Guide Pyramid. *Nutrition Today*, 27, 12-23.
- Willett, W. C. (1994). Diet and health: What should we eat? *Science*, 264, 532-534.
- Williams, D. K., Bock, M. A., Medeiros, D. M., Ortiz, M., Raab, C. A., Read, M., Schultz, H. G., & Sheehan, E. T. (1993). Health beliefs and food supplement use of adults. *Journal of Home Economics*, 85, 23-29.
- Woodburn, M., & Van De Riet, S. (1985). Safe food: Care labeling for perishable foods, *Home Economics Research Journal*, 14, 3-10.
- Xiao, J. J., Malroux, L., & Olson, G. (1995). Factors associated with emergency food recipient's information research. *Family and Consumer Sciences Research Journal*, 23, 409-429.

The Evolution of Family Studies Research

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This article reviews the emerging methodological, theoretical, and topical trends in the field of family studies across the 20th century. We discuss transitions in the definitions and methods of studying families and analyze the changes in marriage and intimate partnerships, parent-child relationships, and the social ecology of the family. These general topics include issues such as marital satisfaction, violence, the social construction of gender, the interface of family and work, conceptualizations of parenting roles and socialization processes, poverty, diversity, and multiculturalism.

With regard to the daunting task that this title implies, we have found that one of the fortunate aspects of our field seems to be the compulsion for reflection and organization. Decade reviews and special topical issues appear with regularity in a variety of journals. Handbooks and sourcebooks on a variety of topics are compiled for researchers and practitioners. For example, the March 1984 issue of the *Home Economics Research Journal* provided a review of scholarship in the various areas of the discipline. In addition, the *Journal of Marriage and Family* publishes decade reviews on diverse family-related research topics, and the second edition of the *Handbook of Marriage and the Family* (Sussman, Steinmetz, & Peterson, editors) was published in 1999. In light of this extensive compilation of work by many other individual researchers and journals, we have defined our task, then, not in terms of a traditional literature review but rather as that of identifying and interpreting the emergent trends in family studies research. We will discuss these from both methodological and topical perspectives.

THEORETICAL AND METHODOLOGICAL ISSUES

To discuss “what we study” and “how we study it” is at once both simple and complex. Researchers and practitioners from related

disciplines such as sociology, social work, communication, and psychology have made significant contributions to our understanding of contemporary families. As a distinct discipline, family studies takes a holistic perspective of the interaction of families and the social structures within which they exist. The mission of family and consumer sciences and hence, family studies researchers, is "to provide knowledge, including research and services, which will promote the welfare of families and individuals" (McKenry & Price, 1984). In other words, family studies differs from other disciplines in several ways but perhaps most important, in its inherent commitment to social change. Bernardes (1993) advocates this perspective for all who study families when he argues the importance and inevitable influence of practice on policy outcomes, stating that "Even the most apparently innocuous theoretical work may have dramatic impacts around the world" (p. 39)

Given family and consumer sciences' emphasis on real and direct practical consequences, it becomes important to recognize that the very definition of families has undergone significant change in recent years. This change in how we view families, in turn, influences our theories of families and our ideas about how to study them. With this in mind, we turn to an examination of the definition of family and transitions in methodology.

Defining the Family

Unprecedented changes occurred across the 20th century in the very definition of "the family" itself. As DeFrain and Olson (1999) note, traditional notions of the family hold that marriage, children, biological ties, two parents, and a stay-at-home mother are the sine qua non of the perfect family form. For example, in Christensen's (1964a, 1964b) classic *Handbook of Marriage and the Family*, marriage was defined as "an institutionalized mating arrangement between human males and females," and the family was defined as "marriage plus progeny" (p. 3). Indeed, throughout the family literature of the first six decades of the 20th century, these values of the traditional family were very clearly used to frame not only the definition of what constituted a family but also the worthiness of each variation from the primary model of mom, dad, and biological children. As a result, family studies research from 1900 to 1960 often utilized terms such as *father-absence*, *non-maternal care*, *broken families*, *never married*, and

out-of-wedlock childbearing when studying family forms that deviated from what was considered the norm.

The latter half of the 20th century brought earlier and more gradual changes in rates of marriage, fertility, divorce, and female participation in the labor force to the forefront as these trends accelerated. For example, between the decade of the 1960s and the decade of the 1990s, the marriage rate decreased from 77 to 55 per 1,000 unmarried women, the age at first marriage increased from 23/21 to 26/24 for men/ women, the divorce rate increased from 11 to 21 per 1,000 married couples, the birth rate to unmarried women increased from 26 to 45 per 1,000, and the percentage of married women in the labor force increased from 30% to 61% (Teachman, Polonko & Scanzoni, 1999). Concomitantly, family scholars began to call for more study of alternative and nontraditional family forms and to call for broader definitions of the very family itself.

By the 1990s, family diversity was considered normative, and the notion that we could have a singular definition of the family had nearly disappeared from the family studies literature (Allen, Fine, & Demo, 2000; DeFrain & Olson, 1999; Peterson & Steinmetz, 1999; Walker, 2000). Ultimately, definitions of the family transformed over the century to become inclusive of multiple variations and to emphasize the importance of emotional bonds. For example, Allen et al. (2000) note that "a family is characterized by two or more persons related by birth, marriage, adoption, or choice. Families are further defined by socioemotional ties and enduring responsibilities, particularly in terms of one or more members' dependence on others for support and nurturance" (p. 1). Such definitions explicitly include a diversity of family patterns and relationships, from gay couples to women caring for dependent children to a husband and wife who wed for the first time in their 70s. Clearly, family studies scholars have concluded that it no longer makes sense to restrict the definition of family to a monolithic view or to use the traditional nuclear family as the standard of comparison. Rather, the field has evolved to view the family in its many patterns and relationships as changing and adaptive (Peterson & Steinmetz, 1999).

As a review of how family has been defined highlights, we must also acknowledge that the concept of families is socially constructed. Gubrium and Holstein (1990) demonstrate how this occurs on levels ranging from the personal to societal discourses of families. This perspective asserts that everyday events and language shape our ideas

about families through a process that is multidirectional. Consider the implications given that the interrelated roles and behaviors and resultant expectations inherent in familial relationships are ingrained in our society. For example, individuals use the term *family* (albeit in its traditional sense) to define other close relationships. We often hear a phrase such as “she is just like family” used to describe a variety of intimate yet nonfamilial relationships (Rubin, 1985). Such conceptualizations of close relationships reshape our notions of family, making us mindful of this reconstruction process and its influence on the definition of families.

Theoretical and Methodological Perspectives

Directly related to this change in our view of the family is its effect on how research on families is conducted. Where modernism offered a monolithic theory of family, postmodernism focuses on pluralistic family relationships and structures. The result of this adaptive and diverse view is evident in current conceptualizations of families and intimate relationships. In our discussion of emerging developments in the area of theory and methodology, we draw heavily on the work from the *Handbook of Marriage and the Family* (Sussman et al., 1999). In addition, we assume that the reader is familiar with the major family theories.

Through the 1980s into the new millennium, our ideas about how we study intimate relationships have undergone significant change. This has paralleled the transition from modernism to postmodernism. Early in the 20th century, family studies researchers adopted a modernistic approach to research in an effort to establish legitimacy as a field of study. Modernism, as it applies to social sciences theory and methodology, can be described by the scientific method outlined by Christensen (1964a). He states that “the attitude of science is that of value-free truth-seeking; the method is that of the objective analysis of empirical data; and the aim is that of predictive theory” (p. 11). This emphasis on the scientific (i.e., on empirical data, replicable results, and theory building) has had a great influence on new scholars as they prepare to study the family. Postmodernism is essentially a reaction to the principles of change, rationality, and the generativity of universal knowledge that characterize modernism. Although there seems to be no overall consensus regarding the definition of postmodernism (Doherty, 1999), as an approach to the study of families it is self-questioning and reflexive and recognizes the

value-laden nature of research and the researched. It is also pluralistic and contextual in its view of family and, in general, questions universal theories and the progress and nature of modern culture (Allen, 2000; Cheal, 1993; Doherty, 1999).

For an in depth discussion, see Doherty (1999) who outlines five postmodern influences on family theories. First, he identifies the opposition to the standardization of family (i.e., defining the norm as heterosexual, two-generational, etc.) as having the most significant impact. Second, postmodernism influences family theory through its criticism of positivist approaches to family research and a continuing debate over differences between and compatibility of postpositivism and postmodernism paradigms. Third, the increased use of discourse analysis in family research has highlighted examination of everyday language and the narrative as a method of uncovering the social and personal constructions of meaning. Fourth, Doherty (1999) discusses the combined influence of feminism and postmodernism that created a view of the social construction of differences between and among race, class, and gender, for example. In addition, we feel it is important to note here that feminists have been leading the fight to rethink our definitions of family and the ways in which we study them, talk about them, and support them (Allen, 2000; Cheal, 1993; Doherty, 1999). Finally, Doherty (1999) identifies the "new family historicism in family science" as an influence on theory, although it is not a new concept. Life-course theory is well established in the field (Bengtson & Allen, 1993), yet the innovation of this postmodern approach is its self-reflexivity: its application to the field and researchers themselves.

As postmodern thought emerged, so began a slow increase in the use and acceptance of diverse research methods with the focus on subjectivity and induction. This is in stark contrast to modernism's emphasis on deduction, rigorous and structured methodological design, and the use of increasingly complex statistical analyses. The methodological distinction between the two seems to be somewhat simplistically characterized by modernists' quantitative breadth of knowledge and postmodernists' qualitative depth of knowledge. In addition, the argument has been put forth that the modernist approach was and still is the order of the day in many research methods classes and, hence, in acceptable and publishable theses, dissertations, and research articles (Emery & Lloyd, 1994; Gilgun, 1999). Although there is still a relative lack of opportunity for formal training in qualitative methods, encouragement and training opportunities have increased in recent years. Influential journals (for example,

Journal of Marriage and Family) have sought out qualitative articles, and journals, such as *Qualitative Inquiry*, are devoted to this methodology (see Gilgun, 1999, for a discussion of qualitative methods and history).

In conjunction with the increased recognition and validation of qualitative methods, critical advancements have been made in the field of quantitative methodology and modeling. Increasingly, researchers are using latent growth curves, social relations analysis, hierarchical linear models, hazard rate modeling, confirmatory factor analysis, analysis of covariance structures, mathematical nonlinear modeling, survival analyses, and latent variable structural equation modeling to study complex family interactions, trajectories, and ecologies. These methods address critical issues, including nonindependence of observations, the correlation of measurement errors, cross-population comparisons, missing data, attrition, growth and decline over time, multidimensionality of constructs, and simultaneous effects (Acock, 1999; Acock & Schumm, 1993; Duncan, 1999; Gottman, Swanson, & Murray, 1999; Karney & Bradbury, 1995; Kashy & Levesque, 2000; Kenny, 1994). These techniques have increased our understanding of complex phenomena, such as the influence of parents' affect on adolescent relationship competence (Paley, Conger, & Harold, 2000); the relationship between parenting quality, childhood antisocial behavior and subsequent adolescent delinquency (Simons, Chao, Conger, & Elder, 2001); differential parental treatment of siblings (Feinberg, Neiderhiser, Simmens, Reiss & Hetherington, 2000); and the developmental impact of physical aggression on marital dysfunction (Lawrence & Bradbury, 2001). Ultimately, quantitative methods continue to move in the direction of being able to describe the richness and contradictions of family life.

Rather than debate the superiority of one method over the other, we believe the point of postmodernism, as well as sophisticated quantitative designs, challenges contemporary researchers to value and utilize the strengths of both approaches. Likewise, contemporary feminists have been strong proponents of this perspective. They recognized early on the strengths of both qualitative and quantitative methods in their respective abilities to answer questions and produce knowledge of families at different levels of analysis (Gilgun, 1999; Sollie & Leslie, 1994). Our assertion, as well as that of other scholars (Allen, 2000; Glaser & Strauss, 1967; Peterson & Hann, 1999; Walker, 2000), is that pluralism is the key to the study of contemporary families.

RESEARCH TRENDS AND TRANSITIONS

We must note that it would be impossible to review every area of interest and/or importance in family studies. The 2000 decade review of the *Journal of Marriage and the Family* covers 23 different topics, each with substantial reference sections numbering from approximately 150 to more than 200 citations. We felt it was important, however, to look at the changes in the study and conceptualization of research in the areas of marriage and intimate partnerships, parent-child relationships, and the social ecology of the family. These general topics include issues such as marital satisfaction, violence, the social construction of gender, the interface of family and work, conceptualizations of parenting roles and socialization processes, poverty, diversity, and multiculturalism.

Marriage and Intimate Relationships

Family studies scholarship on marriage, like marriage itself, has undergone many transformations across the century. As a culture, we have extensively redefined our expectations of marriage, including transformations in behavior and values around the importance of love, good communication, and high satisfaction. We have expanded our notions of what is a healthy and appropriate pair bond, with a legal marriage no longer viewed as an absolute necessity. And, even the strong heterosexual emphasis that characterized most of the century has begun to erode (although gay and lesbian relationships are certainly not universally acknowledged or accepted).

As marriage and adult intimate partnerships have been redefined, so too has scholarship in this arena undergone profound transformations. This section of the review will emphasize three areas where these shifts have been most evident: in the study of marital satisfaction and interaction, in the analysis of gender within intimate partnerships, and in the conceptualization of "problems" within intimate relationships.

Satisfaction and interaction. Certainly, marital satisfaction has been one of the most studied topics in the field of family studies research. The centrality of marital satisfaction in the field of family studies is evident throughout the century in classic research reviews by Komarovsky and Waller (1945), Christensen (1964b), Lewis and Spanier (1979), McKenry and Price (1984), Glenn (1990), and Bradbury, Fin-

cham, and Beach (2000). And, like so many arenas of family studies scholarship, the study of marital and partner satisfaction has undergone fundamental changes over time.

As family developmental theory gained hold mid-century, the study of marital satisfaction across the family life cycle became a critical focus for family scholars. Early research in this arena documented a curvilinear relationship between satisfaction and the life cycle, with satisfaction beginning at high levels in the early years of marriage, dropping with the birth of the first child and through the child-rearing years, and returning to higher levels with the launching of children and the retirement years (Feldman & Feldman, 1975; Lewis & Spanier, 1979; McKenry & Price, 1984; Rollins & Feldman, 1970). However, these studies relied on cross-sectional methodologies, so the curvilinear trajectory of satisfaction was inferred rather than observed over time. Recent studies with longitudinal designs and more detailed assessments of the life cycle have not supported the U-shaped curve of satisfaction. Rather, marital satisfaction appears to decline steadily over the first decade of marriage (whether or not children are present) and then level off to a more gradual decline (Cowan & Cowan, 1992; Glenn, 1998; Huston, McHale, & Crouter, 1986).

At the same time that scholars were questioning the curvilinear relationship between marital satisfaction and the family life cycle, they were also expanding the definition and measurement of satisfaction to reach beyond marriage into a broader conception of relationship satisfaction and maintenance. Such definitions allowed the inclusion of premarital and postmarital heterosexual relationships and gay and lesbian relationships (Cate & Lloyd, 1992; Dindia, 2000; Masheter, 1997; Patterson, 2000; Peplau & Spaulding, 2000).

Major changes in the conceptualization and measurement of marital/relational satisfaction have paralleled the increased sophistication of family studies methods and theories. For example, family studies scholars have increasingly emphasized the multifaceted nature of satisfaction, expanding beyond a notion of satisfaction as the absence of unhappiness to incorporate the reality that positivity and negativity (and indeed, even violence) can coexist in intimate partnerships that are described as satisfying (Bradbury et al., 2000; Fincham & Linfield, 1997; Lloyd, 1996). Relational satisfaction is increasingly conceptualized as a trajectory that encompasses fluctuations and changes in evaluations of the relationship over time rather than as a fixed description of the overall state of the relationship (Bradbury et al., 2000). And, the importance of examining the

interplay of satisfaction, maintenance behaviors, communication, decision making, and conflict negotiation has been firmly established (Canary & Messman, 2000; Dindia, 2000; Hendrick & Hendrick, 2000).

One of the most informative changes in the study of relational satisfaction has occurred in the arena of couple interaction and interpersonal processes (Gottman & Notarius, 2000). This rich literature includes detailed descriptions of cognitions, affect, physiology, and interaction. Findings emphasize the role of hostile and maladaptive attributions in sustaining dissatisfaction and deterioration (Bradbury et al., 2000; Holtzworth-Munroe & Smutzler, 1996); the relationship of husband's rejection of wife's influence, escalation of low-intensity affect, and a low ratio of positive to negative affect to marital unhappiness and instability (Gottman, Coan, Carrere, & Swanson, 1998); the role of physiological arousal in marital interaction among distressed, nondistressed, and aggressive couples (Coan, Gottman, Babcock, & Jacobson, 1997; Gottman & Levenson, 1992); and the ways in which the relationship itself is constructed through communication and interaction (Whitchurch & Dickson, 1999).

A final interesting transition in the literature on relational satisfaction has occurred around the discussion of power. Whereas early studies emphasized the examination of who makes key decisions and wins contested arguments (Broderick, 1993; Scinovacz, 1987; Sprey, 1999), recent work has transitioned into more precise examinations of marital conflict interactions, with an emphasis on gender, patterns of dominance, the relational hierarchy and violence (Gottman & Notarius, 2000; Walker, 1999; Whitchurch & Dickson, 1999). Here the evidence is accumulating that men display a more coercive style and women a more affiliative style of relational problem solving, that the escalation of negative affect and asymmetric influence are key dynamics in dissolution, that power dynamics are at the heart of men's relational violence against women, and that couples evidence multiple types of functional and dysfunctional power relationships (Fitzpatrick & Ritchie, 1993; Gottman & Notarius, 2000; Johnson & Ferraro, 2000).

Gender and intimate relationships. Gender has been an important aspect of the study of marriage and intimate relationships throughout the century. From the classic treatise by Bernard (1972) on "his and her marriages" to recent work on continued inequities between husbands and wives in the marital bargain (Knudson-Martin & Mahoney, 1998; Steil, 2000), gender in many ways has been a core concept in family

studies scholarship. Yet, this arena of inquiry has also undergone very significant shifts in conceptualization over time.

Walker (1999) notes that early research focused on biological sex as an independent variable and treated it as a way to understand differences between men and women in satisfaction, decision making, conflict and so forth. Such notions essentialized gender differences by conceptualizing small differences between men and women as fundamental and immutable and granting these small differences great predictive power in explaining both the joys and problems of intimate relationships (Rutter & Schwartz, 2000; Wood, 2000). From this grew a strong emphasis on gender roles in families, with examinations of how men and women were both biologically programmed and socialized to take on differing roles and obligations (Walker, 1999). However, with the rise of feminist theories of the family in the 1970s and 1980s, such narrow, biologically focused conceptualizations of roles and gender were questioned. In the last decade of the century, feminist family scholars increasingly emphasized a social constructionist view that highlights the ways in which “women and men are stratified such that their resulting perceptions, expectations, behavior, and experiences differ” (Walker, 1999, p. 440). Such gender perspectives firmly place men, women, and intimate relationships within social structures and acknowledge the many ways that social institutions and systems affect everyday life and reproduce patriarchy within the family (Baber & Allen, 1992; Rutter & Schwartz, 2000; Thompson & Walker, 1989; Walker, 1999). Ultimately, gender, femininity, and masculinity are conceptualized as roles that are constructed and sustained through social practices, language, custom, and prevailing ideologies (Fox & Murry, 2000; Wood, 2000).

Attention to gender as a social construct has revealed myriad processes wherein the male dominance of the larger social structure is reproduced in intimate relationships. For example, wives are more likely to be concerned with providing support to husbands, accommodating their needs to their husbands' lives and schedules, and consciously working to avoid upsetting their husbands (Fox & Murry, 2000; Gottman & Notarius, 2000; Steil, 2000). Women in intimate heterosexual pairings—whether married, cohabiting, or dating—are also at significant risk of experiencing emotional, sexual, and/or physical violence (Christopher & Lloyd, 2000; Lloyd & Emery, 2000). Women, more so than men, engage in maintaining conversations and relationships, talk about relational problems, raise issues that may lead to conflict, and view talking about the relationship as a way to

increase intimacy; interestingly, these gender differences are seen both in heterosexual and in gay and lesbian relationships (Wood, 2000).

Finally, examinations of the social construction of marriage itself reveal an interesting interplay of gender and power. For example, in a study conducted by Knudson-Martin and Mahoney (1998), couples who identified themselves as very egalitarian and nongendered in their marital roles still evidenced marital inequality that was reproduced through subtle processes of power and language. This myth of equality serves to avoid conflict and keep partners from acknowledging the power dynamics of their intimate relationships (Hare-Mustin, 1994; Knudson-Martin & Mahoney, 1998; Steil, 2000).

Reconceptualizing problem areas in relationships. As a final piece of our analysis of the ways in which the study of marriage and intimate relationships has changed over the century, we would like to briefly speak to the ways that problem areas in relationships have been reconceptualized in significant ways within family studies scholarship. Here we will address three arenas of research: divorce, violence, and gay/lesbian relationships.

Amato (2000a) notes that the rise in the rate of divorce may be the most dramatic and far-reaching change in family life in the 20th century. Whereas only about 5% of marriages ended in divorce in the mid-19th century, by the end of the 20th century it was estimated that nearly 50% of the 1990 cohort of first marriages would end in divorce (Amato, 2000a). Through this same time period, there has been a very interesting shift in the ways in which the impact of divorce has been conceptualized and studied. Early studies overwhelmingly emphasized the deleterious effects of divorce on children and parents alike; broken homes were viewed as the root of delinquency and adjustment problems for children and youth, and parents who divorced were conceptualized as immature, mentally ill, alcoholic, violent, or inadequate (Groves, 1927). Divorce was overwhelmingly framed in negative terms only.

As McKenry and Price (1984) note, research on divorce changed significantly during the 1970s and 1980s. At this point, the emphasis was on understanding what happens during and after divorce, rather than on vilifying those who divorced. And, as divorce became a more normative part of family life, so did the realization that divorce changes familial relationships rather than terminating them. Recent reviews of the huge literature on divorce emphasize the complexity of

stress and adjustment in divorce (Amato, 2000a, 2000b; Fine, 2000). The long- and short-term impact of divorce is mediated by a myriad of factors, including the nature of the relationship between parents post-divorce, the level of economic resources, the presence of other stressors, and interpersonal and extended kin resources (Amato, 2000a and 2000b; Faust & McKibben, 1999). And, as in so many arenas of family research, the emphasis today is on the diversity of functioning within divorced, single-parent, remarried, and step families (Amato, 2000b; Faust and McKibben, 2000; Fine, 2000; Ganong & Coleman, 2000; Hetherington & Stanley-Hagan, 2000).

Violence is another arena of family scholarship that has undergone fascinating changes in conceptualization. The presence of violence in marriage and intimate relationships was virtually ignored until the early 1970s (Gelles & Straus, 1979). The second wave of feminism served to bring the issue of domestic violence out of its cloak of invisibility; family scholars soon followed with analyses of the causes and consequences of this newly recognized social problem (Dobash & Dobash, 1979). Over time, scholars' conceptualizations of the roots of violence moved from an early emphasis on personal or social pathology to violence as a normative part of family life (Gelles & Straus, 1979). Although beset with several arenas of high controversy (such as the disagreement over how gender intersects with violence) (see Bograd, 1990), the rich literature on domestic violence has evolved into an arena where important distinctions are being drawn, including refinements in specifying the myriad types of violence against intimate partners, the types of perpetrators, and the types of relationships (including heterosexual dating, marriage, and cohabitation, and gay and lesbian relationships) (Johnson & Ferraro, 2000). Furthermore, theoretically the area has become increasingly sophisticated, clarifying the differences between resistance and self-defense (Johnson & Ferraro, 2000); bringing together social constructivist, relational, and feminist frameworks (Lloyd & Emery, 2000); and exploring the roots of domination, power, and control (Coan et al., 1997; Jacobson & Gottman, 1998; Lloyd & Emery, 2000; Stets, 1988).

A final example of a problem area that has fundamentally changed in emphasis within family scholarship is the study of gay and lesbian relationships. Once again, early work framed homosexuality exclusively as abnormal and unhealthy. This early work usually failed to acknowledge that healthy intimate relationships were even a possibility for gays and lesbians. Still, as families and culture began to fundamentally change in the latter third of the century, there was

increasing recognition of gay and lesbian intimate relationships and parenting relationships. Recent reviews cite a plethora of work on the interpersonal dynamics of lesbian and gay intimate relationships, parent-child relationships when parents, children, or both are gay/lesbian, and extended family relationships (Patterson, 2000; Peplau & Spaulding, 2000; Savin-Williams & Esterberg, 2000). These reviews consistently note that many gay men and lesbians are involved in satisfying and supportive close relationships with their partners, with their children and with their families of origin.

In conclusion, we must note that the study of these three arenas of scholarship (divorce, violence, gay/lesbian relationships) has controversies. For example, the recent book by Wallerstein, Lewis, and Blakeslee (2000), with its strong emphasis on the negative effects of divorce on children as they mature into young adulthood, stands in sharp contrast to Amato and Gilbreth's (1999) meta-analysis of the impact of father absence, with its strong emphasis on the need to take a multifaceted and mediated view. And certainly, gay and lesbian families (not to mention scholarship that highlights their familial and relational strengths) are still contested arenas in the research and popular literature. As Stacey (2000) notes, at the turn of the 21st century, we are beset both by a call to return to traditional family values (with an accompanying backlash against pluralist family forms) and by the celebration of a gender-bending, multiracial, postmodern, and democratic family condition.

Parenting and Parent-Child Relationships

This area of research has seen interesting shifts in focus in recent years. Social concerns such as the divorce rate, single parenting, step-parenting, school violence, economic pressures, and the difficulties of balancing family and work have caused society to turn to the family and specifically to the parent-child relationship for answers. Researchers have responded with a plethora of rich, diverse theoretical and empirical work regarding the parent-child relationship and the parenting role. (For example, see the *Handbook of Marriage and the Family*, 1999; the *Handbook of Family Diversity*, 2000; and the *Journal of Marriage and Family*, 62(4), 2000 for in-depth reviews covering diverse topics related to parenting.) We, however, will focus on two trends that stand out in the literature: the social construction of parenting and issues of socialization.

Social construction of parenting. In recent years, we have seen the concept of parent expand from a gendered connotation of mother and father to a vision of shared parenting. The traditional and somewhat simplistic construction of parent treats the roles of mother and father as mutually exclusive, almost separate, entities, which is reminiscent of the stereotypic masculine/feminine or instrumental/expressive roles typified by Parsons and Bales (1955). The concept of shared parenting (Ehrensaft, 1993) regards mothers and fathers as equal partners in the child-rearing process. Although she refers to two-parent, heterosexual relationships, we would include partnerships of gay and lesbian couples, multigenerations (i.e., grandparents' contributions to parenting their grandchildren), stepparents, and all of the many forms that families take.

A look at recent reviews of parenting research not only identifies many theoretical, empirical, and topical trends but also provides examples of this conceptualization of parenting. Arendell (2000) acknowledges the social constructionist issues of gendered politics of motherhood and how women make room for men when they want to "mother" to be important issues for future research. Marsiglio (1993) states that there are methodological implications for future research on fatherhood considering,

To the extent that fathers and mothers develop gendered perspectives on parenthood, they may be inclined to distort and discount each other's sense of reality as well as their own parental practices (p. 495).

Daly's (1993) qualitative study of fathers concludes that they are actively reshaping their roles in a context of postmodern pluralism. In Ehrensaft's (1993) article, the title, "When Men and Women Mother," implies that the real parenting is done within the realm of mothering. Again, as we have seen the term *family* come to typify intimate relationships, mother has come to exemplify active parenting, eclipsing that of father.

Recently, there have been several articles reviewing the scholarship on mothering and that on fathering. For example, in their article on fatherhood, Marsiglio, Amato, Day, and Lamb (2000) identify four major areas of focus in recent research: theoretical assertions that examine fatherhood as a product of sociocultural contexts, diversity in both forms and involvement of fatherhood, the father-child relationship affecting developmental outcomes, and the reciprocal and negotiated nature of fatherhood. Arendell (2000) looks at the research

on motherhood in broad terms such as the various conceptualizations and the phenomenon of motherhood. She also identifies the need for attention in the areas of meanings and identities, relationships with children and others, experiences of motherhood, and social construction of mothering issues. Ironically, despite these authors' attention to the contextual, socially constructed, and negotiated nature of mothering and fathering, there seemed to be relatively little discussion of overlap between parenting roles.

Our point here is not to devalue the excellent editorial and empirical work that has been and is being done in the areas of parenting. Nor do we suggest that it is not appropriate or necessary to continue to study mothering and fathering. We do agree with others (e.g., Ehrensaft, 1993; Peterson, Bodman, Bush, and Madden-Dedrich, 2000), however, who purport that important aspects of parenting may be obscured by the traditional emphasis on gender. For example, Ehrensaft's (1993) discussion of shared parenting includes concepts such as intimacy, commitment, attention to the parent-child and adult relationships, and the assumption of the primary caregiver role. These factors cross lines of ethnicity, race, class, and relationship status (i.e., single parent, stepparent, grandparent, etc.) as well as gender. An expanded, pluralistic view of parenting provides important insight into the issues extending beyond differences between genders (Arendell, 2000; Peterson et al., 2000).

Issues of socialization. There also has been a shift in our view of the effects of the parent-child relationship on the socialization process. Peterson and Hann (1999) provide an extensive review of four perspectives regarding this process. On one hand is the oldest tradition of the parent effect perspective, which imbues parents with an omnipotent influence over all aspects of children's development (Clarke-Stewart, 1988; Peterson & Hann, 1999). Research on parental influences on children's socialization has included parental style (Stafford & Bayer, 1993) and observational learning and authority (Bandura, Ross, & Ross, 1963; Peterson & Rollins, 1987). Another perspective is that of *child effects*, which states, for example, that children's age and development and infants' temperament influence parental behaviors, attitudes, and experiences (Peterson & Hann, 1999; Stafford & Bayer, 1993). The third perspective of reciprocal socialization (Peterson & Hann, 1999) asserts that both parents and children have mutual influence on each other. Here, children's and parents' individual characteristics and experiences combine to

influence interaction and attachment (Bretherton, Biringen, & Ridgeway, 1991; Peterson & Rollins, 1987). Finally, a systemic-ecological perspective views parent-child relationships as interdependent or connected with their environment (Peterson & Hann, 1999). In other words, there are multiple influences (i.e., divorce, work, social class, race, etc.) that serve to socialize the child.

Critiques of the first two perspectives focus primarily on the limitations of a unidirectional, deterministic perspective of parents' influence on children or vice versa (Peterson & Hann, 1999). Reciprocal socialization and the systemic models have the potential to be infinitely complex, creating methodological problems. Furthermore, Peterson et al. (2000) state that future research should focus on conceptualizing the parent-child roles in more flexible and diverse terms with an eye toward family historicism. In addition, we need to realize that individuals within these roles are not just reactors but actively negotiate and adapt to environmental change.

The Social Ecology of the Family

The final portion of this review article will briefly address the burgeoning literature on the social ecology of marriages and families. We will speak first to the broad trends across the century and then examine scholarship in three key arenas: the family-work interface, the multicultural/multiracial context, and social capital.

Certainly, given its historical roots in home economics, human ecology, and sociology, the field of family studies has always been concerned with social contexts. Groves' 1927 *Social Problems of the Family*, Christensen's 1964b *Handbook of Marriage and the Family*, Waller's 1938 textbook *The Family: A Dynamic Interpretation*, and Paolucci's 1972 text entitled *The Family as an Eco-System* all emphasize the inclusion of class, culture, race/ethnicity, and other social addresses as critical to understanding the family. However, these early works often employed unidimensional demographic analyses and reflected the prevailing biases of the day toward people of color, working mothers, and the poor. For example, in a passage examining race differences in divorce, Kephart (1964) states,

Negroes tend to use the ground of desertion, while among Whites the principal legal ground is cruelty . . . Family traditions are neither made nor broken overnight, and vestiges of the loose, matriarchal type of family can still be seen among lower class Negroes. (pp. 958-959)

It is easy to gain a sense of just how much scholarship has changed over the century by contrasting Kephart's language with this passage examining racial and ethnic socialization by McLloyd, Cauce, Takeuchi, and Wilson (2000):

African American parents' discussion of race with their children tend to focus on preparing their children for prejudice . . . messages intended to promote racial mistrust are a comparatively minor, if not rare, element of racial socialization. (p. 1085)

Similar changes in language and framing are apparent in the literatures on work and family and on economic stress and poverty. Fortunately, the trend we noted early in this article on an increased understanding of the strengths of diverse family forms is reflected in the literature on the social ecology of the family. And, it is a testament to the strength of the roots of home economics that ecological models that emphasized the synergistic intersection of family well-being with its economic, social, and cultural contexts are still in use nearly a hundred years later.

Let us now turn to a brief look at how the framing of work and family issues, and the examination of families of color, have changed in fundamental ways across the past century of family scholarship. Early on, family scholars examined family and work as two separate spheres and paid scant attention to the intersections between the two (Haas, 1999). Much of this early research focused on employment/unemployment and income level as markers for potential dysfunction in the family (particularly if the employment was maternal and the unemployment was paternal). By the 1960s and 1970s, work and family was a distinct arena of research, although it was narrowly focused on the impact of maternal employment on children and the examination of dual-career marriages. It was not until the 1980s and 1990s that serious attention was given to the interface between work and family, the long-term impact of work on the quality of family life, and the impact of family life on job satisfaction and productivity (Perry-Jenkins, Repetti, & Crouter, 2000).

Recent work on the interface of work and family has discovered complex relationships between work and the quality of family life (often conceptualized as high satisfaction and low burnout/stress among the adults in the household). How much parents work, whether they are on shift work or daytime hours, how household labor and child care are divided, gender ideology, spousal support,

earnings, the complexity of parents' work, child care quality, organizational responsiveness to work and family issues, and life-course issues are all pieces of the complex puzzle of the work–family interface (Coltrane, 2000; Haas, 1999; Perry-Jenkins et al., 2000; Seccombe, 2000). Simplistic models of direct and singular influence of maternal employment have fortunately been laid to rest at last! Rather, today's work examines the complex interplay and reciprocal influences of work life and family life for men, women, and children alike.

Along a similar vein, over the century family scholars have shifted their examination of race away from a simple, demographic, social address, and away from the automatic assumption of dysfunction, toward the examination of the unique strengths of families of color, as well as an acknowledgment of the impact of continued discrimination and racism. Taylor (2000) notes that the early emphasis on pathology was accompanied by a virtual lack of scholarship on the positive processes and dynamics of families of color, a trend that was accompanied by the predominance of White middle-class samples studied by White social scientists. The increasing attention, sophistication, and complexity of theory and research on families of color are testaments to scholars of color who emphasized both structural and cultural approaches as well as the resilience and adaptiveness of families of color (Taylor, 2000).

Recent reviews of relationships, marriage, and parenting in families of color emphasize the importance of examining the socio-historical context, the structure of economic opportunity, multiple gender role patterns, relational identities in multiracial relationships, racial and ethnic socialization, kinship networks and intergenerational relationships (Baca-Zin & Wells, 2000; Gaines & Liu, 2000; Ishii-Kuntz, 2000; McLoyd et al., 2000; Taylor, 2000).

As with so many arenas of family studies scholarship, the study of families of color faces many challenges. One of the most important of these is the continued emphasis on White families as normative; McLoyd et al. (2000) state this dilemma quite powerfully:

But when our core knowledge on family processes among European Americans is based on normative studies, whereas that on people of color is based on follow-ups of high-risk families, there is grave danger that our work will reinforce common stereotypes and prejudices. (p. 1087)

Ultimately, it is clear that monolithic/pathologic notions of families of color must be discarded, and the diversity and resilience of families of color must continue to be carefully examined.

Finally, one of the most critical shifts for families across the 20th century has been the shift in social capital (Coleman, 1987). Social capital refers to the "norms, the social networks, and the relationships between adults and children that are of value for the child's growing up. Social capital exists within the family, but also outside the family, in the community" (Coleman, 1987, p. 36). Coleman (1994) documents historical changes that have brought about a decrease in social capital inside and outside the family as a result of changing labor force attachments of both men and women, the rise of urbanization, and the change from an agricultural to an industrialized society. He further notes that these changes harbor both dangers and opportunities; danger lies in the lack of replacements for former familial and community investments in child rearing, and opportunity lies in the development of programs/institutions that do a terrific job of supporting children and families (Coleman, 1994). Fortunately, researchers such as Schorr (1997) and Comer (1997) document the myriad possibilities for supporting families and children through school, community, health care, and social service linkages.

CONCLUSION

Our task in this article has been to identify and interpret emergent trends in family studies research. As our review has shown, there have been many major transitions in family studies research throughout the 20th century. Methodologically, research has made an interesting transition, moving from the 19th-century reliance on what Christensen called "prescience" to the emerging science of the early 1900s to the mid-century's heavy reliance on modernism with its value-free, objective analysis of empirical data and generation of predictive theory (Christensen, 1964a). Fortunately, we believe, the last two decades of the 20th century have seen an increased emphasis on qualitative analyses, grounded theory, quantitative methods, and diverse, rich methods of study that acknowledge both the values and biases of the researcher and the complex interplay of contextual factors that surround the researched.

Theoretically, the field has expanded from an almost exclusive reliance on sociological/structural theories to emphasize the multiple

levels of influence: from the individual/psychological to the dyadic/family system to the community and institutional. Fortunately, the ecological emphasis that the field of family and consumer sciences brings to the study of families is once again being reaffirmed as a useful tool for understanding individuals and families.

Although the field of family studies is still characterized by empiricism and positivism, the infusion of feminist, constructivist, post-modernist theories with similar advances in both qualitative and quantitative methodology has moved the field toward a pluralistic, qualitatively rich, and multifaceted examination of family life. As we noted in this article, this key transition has helped researchers reframe problem areas such as maternal employment or lesbian lifestyles as forms of family diversity that are filled with joys, stresses, contradictions, and happiness.

It is in this very examination of complicated, diverse, and messy family lives that we see the greatest potential for the future. Walker (2000) makes this point quite eloquently when she reminds us that we should always ask ourselves whether we are examining the issues that are of "tremendous importance to the lived experiences of family members" (p. 607). Walker (2000) and Allen (2000) both make strong arguments that we do not know nearly enough about leisure in families, in-laws and stepkin, gay and lesbian cohabitation, or about the impact of the death of a parent. Ironically, in our quest to generalize, scrutinize, and measure with accuracy, all too often we have overlooked the mundane, everyday interactions that are the building blocks of being connected to the people we love. We urge those who research families in the 21st century to study the everyday and the mundane, and most especially, what people themselves identify as important in their family lives.

REFERENCES

- Acock, A. C. (1999). Quantitative methodology for studying families. In M. B. Sussman, S. K. Steinmetz & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 263-289). New York: Plenum.
- Acock, A. C., & Schumm, W. R. (1993). Analysis of covariance structures applied to family research and theory. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R. Schumm, & S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 451-468). New York: Plenum.
- Allen, K. A. (2000). A conscious and inclusive family studies. *Journal of Marriage and the Family*, 62, 4-17.

- Allen, K. A., Fine, M. A., & Demo, D. H. (2000). An overview of family diversity: Controversies, questions, and values. In D. H. Demo, K. R. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 1-14). New York: Oxford University Press.
- Amato, P. R. (2000a). The consequences of divorce for adults and children. *Journal of Marriage and the Family*, 62, 1269-1287.
- Amato, P. R. (2000b). Diversity within single parent families. In D. H. Demo, K. R. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 149-172). New York: Oxford University Press.
- Amato, P. R., & Gilbreth, J. (1999). Nonresident fathers and children's well-being: A meta-analysis. *Journal of Marriage and the Family*, 61, 557-573.
- Arendell, T. (2000). Conceiving and investigating motherhood: The decade's scholarship. *Journal of Marriage and the Family*, 62, 1192-1207.
- Baber, K. M., & Allen, K. A. (1992). *Women and families: Feminist reconstructions*. New York: Guilford.
- Baca-Zin, M., & Wells, B. (2000). Diversity within Latino families: New lessons for family social science. In D. H. Demo, K. R. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 252-273). New York: Oxford University Press.
- Bandura, A., Ross, D., & Ross, L. A. (1963). Vicarious reinforcement and imitative learning. *Journal of Abnormal and Social Psychology*, 67, 601-607.
- Bengston, V. L., & Allen, K. A. (1993). The life course perspective applied to families over time. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R. Schumm, & S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 505-524). New York: Plenum.
- Bernard, J. (1972). *The future of marriage*. Cleveland, OH: World Publishing.
- Bernardes, J. (1993). Responsibilities in studying postmodern families. *Journal of Family Issues*, 14, 35-49.
- Bograd, M. (1990). Why we need gender to understand human violence. *Journal of Interpersonal Violence*, 5, 132-125.
- Bradbury, T. N., Fincham, F. D., & Beach, S. R. H. (2000). Research on the nature and determinants of marital satisfaction: A decade in review. *Journal of Marriage and the Family*, 62, 964-980.
- Bretherton, I., Biringen, Z., & Ridgeway, D. (1991). The parental side of attachment. In K. Pillemer & K. McCartney (Eds.), *Parent-child relations throughout life* (pp. 1-24). Hillsdale, NJ: Erlbaum.
- Broderick, C. B. (1993). *Understanding family process: Basics of family systems theory*. Newbury Park, CA: Sage.
- Canary, D. J., & Messman, S. J. (2000). *Relationship conflict*. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 261-272). Thousand Oaks, CA: Sage .
- Cate, R. M., & Lloyd, S. A. (1992). *Courtship*. Newbury Park, CA: Sage.
- Cheal, D. (1993). Unity and difference in postmodern families. *Journal of Family Issues*, 14, 5-19.
- Christensen, H. T. (1964a). The development of the family field of study. In H. T. Christensen (Ed.), *Handbook of marriage and the family* (pp. 3-32). Chicago: Rand McNally.
- Christensen, H. T. (1964b). *Handbook of marriage and the family*. Chicago: Rand McNally.
- Christensen, H. T. (1964c). The intrusion of values. In H. T. Christensen (Ed.), *Handbook of marriage and the family* (pp. 969-1006). Chicago: Rand McNally.

- Christopher, F. S., & Lloyd, S. A. (2000). Physical and sexual aggression in relationships. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 331-344). Thousand Oaks, CA: Sage.
- Clarke-Stewart, K. A. (1988). Parents' effects on children's development: A decade of progress? *Journal of Applied Developmental Psychology, 9*, 41-84.
- Coan, J., Gottman, J. M., Babcock, J., & Jacobson, N. (1997). Battering and the male rejection of influence from women. *Aggressive Behavior, 23*, 375-388.
- Coleman, J. S. (1987). Families and schools. *Educational Researcher, 16*, 32-38.
- Coleman, J. S. (1994). Family involvement in education. In C. L. Fagnano & B. Z. Werber (Eds.), *School, family and community interaction: A view from the firing lines* (pp. 23-38). Boulder, CO: Westview.
- Coltrane, S. (2000). Research on household labor: Modeling and measuring the social embeddedness of routine family work. *Journal of Marriage and the Family, 62*, 1208-1233.
- Comer, J. P. (1997). *Waiting for a miracle: Why schools can't solve our problems and how we can*. New York: E. P. Dutton.
- Cowan, C. P., & Cowan, P. A. (1992). *When partners become parents: The big life change for couples*. New York: Basic Books.
- Daly, K. (1993). Reshaping fatherhood: Finding the models. *Journal of Family Issues, 14*, 510-530.
- DeFrain, J., & Olson, D. H. (1999). Contemporary family patterns and relationships. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 309-326). New York: Plenum.
- Dindia, K. (2000). Relational maintenance. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 287-300). Thousand Oaks, CA: Sage.
- Dobash, R. E., & Dobash, R. P. (1979). *Violence against wives: A case against patriarchy*. New York: Free Press.
- Doherty, W. (1999). Postmodernism and family theory. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 205-217). New York: Plenum.
- Duncan, T. E. (1999). *An introduction to latent variable growth curve modeling: Concepts, issues and applications*. Mahwah, NJ: Lawrence Erlbaum.
- Ehrensaft, D. (1993). When women and men mother. In A. Minas (Ed.), *Gender basics* (pp. 491-499). Belmont, CA: Wadsworth.
- Emery, B. C., & Lloyd, S. A. (1994). Women who use aggression in close relationships. In D. L. Sollie & L. A. Leslie (Eds.), *Gender, families, and close relationships: Feminist research journeys* (pp. 237-262). Thousand Oaks, CA: Sage.
- Faust, K. A., & McKibben, J. N. (1999). Marital dissolution: Divorce, separation, annulment and widowhood. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 475-502). New York: Plenum.
- Feinberg, M. E., Neiderhiser, J. M., Simmens, D., Reiss, D., & Hetherington, E. M. (2000). Sibling comparison of differential parental treatment in adolescence: Gender, self esteem and emotionality as mediators of the parenting-adjustment association. *Child Development, 62*, 761-776.
- Feldman, H., & Feldman, M. (1975). The family life cycle: Some suggestions for recycling. *Journal of Marriage and the Family, 37*, 277-284.
- Fincham, F. D., & Linfield, K. J. (1997). A new look at marital quality: Can spouses feel positive and negative about their marriage? *Journal of Family Psychology, 11*, 489-502.

- Fine, M. A. (2000). Divorce and single parenting. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 139-154). Thousand Oaks, CA: Sage.
- Fitzpatrick, M. A., & Ritchie, L. D. (1993). Communication theory and the family. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R. Schumm, & S. K. Steinmetz (Eds.) *Sourcebook of family theories and methods: A contextual approach* (pp. 565-585). New York: Plenum.
- Fox, G. L., & Murry, V. M. (2000). Gender and families: Feminist perspectives and family research. *Journal of Marriage and the Family*, 62, 1160-1172.
- Gaines, S. O., & Liu, J. H. (2000). Multicultural/multiracial relationships. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 97-110). Thousand Oaks, CA: Sage.
- Ganong, L. H., & Coleman, M. (2000). Remarried families. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 155-170). Thousand Oaks, CA: Sage.
- Gelles, R. J., & Straus, M. A. (1979). Determinants of violence in the family: Toward a theoretical integration. In W. R. Burr, R. Hill, F. I. Nye, & I. L. Reiss (Eds.), *Contemporary theories about the family* (pp. 549-581). New York: Free Press.
- Gilgun, J. F. (1999). Methodological pluralism and qualitative family research. In M. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 219-261). New York: Plenum.
- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory*. Hawthorne, NY: Aldine.
- Glenn, N. D. (1990). Quantitative research on marital quality in the 1980s: A critical review. *Journal of Marriage and the Family*, 62, 818-831.
- Glenn, N. D. (1998). The course of marital success and failure in five American 10-year marriage cohorts. *Journal of Marriage and the Family*, 60, 569-576.
- Gottman, J. M., Coan, J., Carrere, S., & Swanson, S. (1998). Predicting marital happiness and stability from newlywed couples. *Journal of Marriage and the Family*, 60, 5-22.
- Gottman, J. M., & Levenson, R. W. (1992). Marital processes predictive of later dissolution: Behavior, physiology, and health. *Journal of Personality and Social Psychology*, 63, 221-233.
- Gottman, J. M., & Notarius, C. I. (2000). Decade review: Observing marital interaction. *Journal of Marriage and the Family*, 62, 927-947.
- Gottman, J. M., Swanson, C., & Murray, J. (1999). The mathematics of marital conflict: Dynamic mathematical nonlinear modeling of newlywed marital interaction. *Journal of Family Psychology*, 13, 3-19.
- Groves, E. (1927). *Social problems of the family*. New York: Century.
- Gubrium, J. F. & Holstein, J. A. (1990). *Where is family?* Mountain View, CA: Mayfield.
- Haas, L. (1999). Families and work. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 571-612). New York: Plenum.
- Hare-Mustin, R. T. (1994). Discourses in the mirrored room: A postmodern analysis of therapy. *Family Process*, 33, 19-35.
- Hendrick, S. S., & Hendrick, C. (2000). Romantic love. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 203-216). Thousand Oaks, CA: Sage.
- Hetherington, E. M., & Stanley-Hagan, M. (2000). Diversity among stepfamilies. In D. H. Demo, K. R. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 173-196). New York: Oxford University Press.
- Holtzworth-Munroe, A., & Smutzler, N. (1996). Comparing the emotional reactions and behavioral intentions of violent and nonviolent husbands to aggressive, distressed and other wife behaviors. *Violence and Victims*, 11, 319-340.

- Huston, T. L., McHale, S., & Crouter, A. (1986). When the honeymoon's over: Changes in the marriage relationship over the first year. In R. Gilmour & S. Duck (Eds.), *The emerging field of personal relationships* (pp. 109-132). Hillsdale NJ: Lawrence Erlbaum.
- Ishii-Kuntz, M. (2000). Diversity within Asian American families. In D. H. Demo, K. R. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 274- 292). New York: Oxford University Press.
- Jacobson, N., & Gottman, J. M. (1998). *When men batter women: New insights into ending abusive relationships*. New York: Simon & Schuster.
- Johnson, M. P., & Ferraro, K. J. (2000). Research on domestic violence in the 1990s: Making distinctions. *Journal of Marriage and the Family*, 62, 948-963.
- Karney, B. R., & Bradbury, T. N. (1995). Assessing longitudinal change in marriage: An introduction to the analysis of growth curves. *Journal of Marriage and the Family*, 57, 1091-1108.
- Kashy, D. A., & Levesque, M. J. (2000). Quantitative methods in close relationships research. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 3-17). Thousand Oaks, CA: Sage.
- Kenny, D. A. (1994). *Interpersonal perception: A social relations analysis*. New York: Guilford.
- Kephart, W. M. (1964). Legal and procedural aspects of marriage and divorce. In H. T. Christensen (Ed.), *Handbook of marriage and the family* (pp. 944-968). Chicago: Rand McNally.
- Knudson-Martin, C., & Mahoney, A. R. (1998). Language processes in the construction of equality in marriages. *Family Relations*, 47, 81-91.
- Komarovsky, M., & Waller, W. (1945). Studies of the family. *American Journal of Sociology*, 50, 443-451.
- Lawrence, E., & Bradbury, T. N. (2001). Physical aggression and marital dysfunction: A longitudinal analysis. *Journal of Family Psychology*, 15, 135-154.
- Lewis, R. A., & Spanier, G. B. (1979). Theorizing about the quality and stability of marriage. In W. R. Burr, R. Hill, F. I. Nye, & I. L. Reiss (Eds.), *Contemporary theories about the family* (pp. 268-294). New York: Free Press.
- Lloyd, S. A. (1996). Physical aggression and marital distress: The role of everyday marital interaction. In D. D. Cahn & S. A. Lloyd (Eds.), *Family violence from a communication perspective* (pp. 177-198). Thousand Oaks, CA: Sage.
- Lloyd, S. A., & Emery, B. C. (2000). *The dark side of courtship: Physical and sexual aggression*. Thousand Oaks, CA: Sage.
- Marsiglio, W. (1993). Contemporary scholarship on fatherhood. *Journal of Family Issues*, 14, 484-509.
- Marsiglio, W., Amato, P., Day, R., & Lamb, M. (2000). Scholarship on fatherhood in the 1990s and beyond. *Journal of Marriage and the Family*, 62, 1173-1191.
- Masheter, C. (1997). Former spouses who are friends: Three case studies. *Journal of Social and Personal Relationships*, 14, 207-222.
- McKenry, P. C., & Price, S. (1984). The present state of family research. *Home Economics Research Journal*, 12, 381-402.
- McLloyd, V. C., Cauce, A. M., Takeuchi, & Wilson, L. (2000). Marital processes and parental socialization in families of color: A decade review of research. *Journal of Marriage and the Family*, 62, 1070-1093.
- Paley, B., Conger, R. D., & Harold, S. T. (2000). Parents affect, adolescent cognitive representations, and adolescent social development. *Journal of Marriage and the Family*, 62, 761-776.

- Paolucci, B. (1972). *The family as an eco-system*. Washington, DC: Kiplinger Washington Editors.
- Parsons, T., & Bales, R. F. (1955). *Family socialization and interaction process*. New York: Free Press.
- Patterson, C. J. (2000). Family relationships of lesbians and gay men. *Journal of Marriage and the Family*, 62, 1052-1069.
- Peplau, L. A., & Spaulding, L. R. (2000). The close relationships of lesbians, gay men and bisexuals. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 111-124). Thousand Oaks, CA: Sage.
- Perry-Jenkins, M., Repetti, R. L., & Crouter, A. C. (2000). Work and family in the 1990s. *Journal of Marriage and the Family*, 62, 981-998.
- Peterson, G. W., Bodman, D. A., Bush, K. R., & Madden-Dedrich, D. (2000). Gender and parent-child relationships. In D. H. Demo, K. A. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 82-104). New York: Oxford University Press.
- Peterson, G. W., & Hann, D. (1999). Socializing children and parents in families. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 327-370). New York: Plenum.
- Peterson, G. W., & Rollins, B. C. (1987). Parent-child socialization. In M. B. Sussman & S. K. Steinmetz (Eds.), *Handbook of marriage and the family* (pp. 471-507). New York: Plenum.
- Peterson, G. W., & Steinmetz, S. K. (1999). Introduction: Perspectives on families as we approach the twenty-first century—challenges for future handbook authors. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 1-10). New York: Plenum.
- Rollins, B. C., & Feldman, H. (1970). Marital satisfaction over the family life cycle. *Journal of Marriage and the Family*, 32, 20-38.
- Rubin, L. (1985). *Just friends: The role of friendship in our lives*. New York: Harper & Row.
- Rutter, V., & Schwartz, P. (2000). Gender, marriage and diverse possibilities for cross-sex and same-sex pairs. In D. H. Demo, K. R. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 59-81). New York: Oxford University Press.
- Savin-Williams, R. C., & Esterberg, K. G. (2000). Lesbian, gay and bisexual families. In D. H. Demo, K. R. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 197-215). New York: Oxford University Press.
- Schorr, L. B. (1997). *Common purpose: Strengthening families and neighborhoods to rebuild America*. Garden City, NY: Doubleday.
- Scinovacz, M. E. (1987). Family power. In M. B. Sussman & S. K. Steinmetz (Eds.), *Handbook of marriage and the family* (pp. 651-694). New York: Plenum.
- Secombe, K. (2000). Families in poverty in the 1990s: Trends, causes, consequences, and lessons learned. *Journal of Marriage and the Family*, 62, 1094-1113.
- Simons, R. L., Chao, W., Conger, R. D., & Elder, G. H. (2001). Quality of parenting as mediator of the effect of childhood defiance on adolescent friendship choices and delinquency: A growth curve analysis. *Journal of Marriage and the Family*, 63, 63-79.
- Sollie, D. L., & Leslie, L. A. (1994). *Gender, families, and close relationships*. Thousand Oaks, CA: Sage.
- Sprey, J. (1999). Family dynamics: An essay on conflict and power. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 667-685). New York: Plenum Press.

- Stacey, J. (2000). The handbook's tail: Toward revels or a requiem for family diversity? In D. H. Demo, K. R. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 440-448). New York: Oxford University Press.
- Stafford, L., & Bayer, C. L. (1993). *Interaction between parents and children*. Newbury Park, CA: Sage.
- Steil, J. M. (2000). Contemporary marriage: Still an unequal partnership. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 125-136). Thousand Oaks, CA: Sage.
- Stets, J. E. (1988). *Domestic violence and control*. New York: Springer-Verlag.
- Taylor, R. L. (2000). Diversity within African American families. In D. H. Demo, K. R. Allen, & M. A. Fine (Eds.), *Handbook of family diversity* (pp. 232-251). New York: Oxford University Press.
- Teachman, J. D., Polonko, K. A., & Scanzoni, J. (1999). Demography and families. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 39-76). New York: Plenum.
- Thompson, L., & Walker, A. J. (1989). Gender in families: Women and men in marriage, work and parenthood. *Journal of Marriage and the Family*, 51, 845-871.
- Walker, A. J. (1999). Gender and family relationships. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (2nd ed., pp. 439-474). New York: Plenum.
- Walker, A. J. (2000). Refracted knowledge: Viewing families through the prism of social science. *Journal of Marriage and the Family*, 62, 595-608.
- Waller, W. (1938). *The family: A dynamic interpretation*. New York: Dryden Press.
- Wallerstein, J., Lewis, J. M., & Blakeslee, S. (2000). *The unexpected legacy of divorce*. New York: Hyperion.
- Whitchurch, G. G., & Dickson, F. C. (1999). Family communication. In M. B. Sussman, S. K. Steinmetz, & G. W. Peterson (Eds.), *Handbook of marriage and the family* (pp. 687-704). New York: Plenum Press.
- Wood, J. T. (2000). Gender and personal relationships. In C. Hendrick & S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 301-316). Thousand Oaks, CA: Sage.

The Evolution of Research in Consumer Science: A 200-Year Perspective

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This article traces the evolution of research in consumer science and highlights historical, social, institutional, and economic events that shaped the field. It gives an overview of research conducted from the late 1790s to the 1990s in the areas of family economics, consumer economics, consumption economics, and home management and chronicles legislative and administrative developments that affected consumer science research. Research topics, the use of theory or lack thereof, and typical statistical techniques are summarized at the end of each historic period.

Consumer science is facing an identity crisis. Although work has been done to define the key components of the discipline, these definitions are not widely used and appear to be little known. The purpose of this article is to acquaint the current generation of scholars with the definitions of family economics, consumer economics, consumption economics, and household management; to recount the history of research in these areas; and to place this history in the context of historical, social, institutional, and economic events that shaped the discipline.

More than 25 years ago, members of the North Central Regional Committee on Family Economics (NCR-52) developed definitions of family economics, consumer economics, and consumption economics. These definitions were first reported in the *Home Economics Research Assessment Planning Projections Report*, known as the HERAPP Report (Ritchey, 1978). The definitions are as follows:

Family economics is concerned with the determinants of levels of livings of families and individuals and with the possibilities for changing these

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levels to better meet personal and societal needs. It is based on principles and concepts of allocation related to the development, acquisition, maintenance, and conservation of scarce resources in productive activity and end uses by families and individuals as they interact with other social and economic systems to achieve their standards of living. (Ritchey, 1978, p. 86)

Consumer economics is the study of economic interactions of consumers with their external environments. It involves economic analysis of market and nonmarket consumption activities, incorporating relevant social, psychological, political, and ecological considerations. (Ritchey, 1978, p. 84)

Consumption economics is the analysis of consumption patterns and behavior of households on both the macro and micro level. (Ritchey, 1978, p. 84)

More recently, Gross, Crandall, and Knoll (1980) defined home management as "purposeful behavior involved in the creation and use of resources to achieve family goals" (p. 6).

These definitions share some common threads. First, all focus on resource generation and use. Second, all are consistent with the idea that purposeful choice guides use of scarce resources because all demands cannot be met. In these two respects, family economics, consumer economics, consumption economics, and home management belie their roots in the broad discipline of economics. The third common thread among these definitions is a central focus on the household as the place where choices are made and the consequences of those choices are experienced. Finally, these definitions explicitly recognize the interaction between the household and its broader environment. In these two respects, however, family, consumer, and consumption economics and home management have a different focus than does the broad discipline of economics.

THE BEGINNING

The first systematic collection of family receipts and expenditures was the work of a clergyman, David Davies (Davies, 1795). From the accounts of six families of his own parish in Berkshire, England, he saw the difficulties of the laborers in stretching their incomes to cover their living costs. On the advice of his friends, he collected information from an additional 129 families. He reported in detail the budgets of the 135 families in the book, *The Case of Labourers in Husbandry Stated and Considered* (Davies, 1795). He was interested only in the poorest

families and used the data only to solicit sympathy and assistance for them. His chief proposal was the enactment of a minimum-wage law (Monroe, 1974; Stigler, 1954).

In 1797, Sir Fredrick Morton Eden published his study, *The State of the Poor* (Eden, 1797), in which he presented budgets of 60 agricultural families and 26 nonagricultural families. He collected a few budgets himself, depended upon respectable clergymen for others, and employed an agent for more than a year to collect the remainder (Monroe, 1974; Stigler, 1954).

Most economic historians probably would agree that the French mining engineer Pierre Guilliame Fredrick Le Play (1806-1882) was the founder of the modern empirical household budgetary analysis, particularly the functional relationship between household income and household expenditures on goods. He believed that a comprehensive analysis of the factors influencing the income and expenditure of a family would offer complete knowledge of that family. Le Play is often identified with the statement, "Tell me how a family utilizes its resources and I will tell you what kind of a family it is" (Zimmerman & Frampton, 1935, p. 57).

Le Play's greatest contribution was his unique method of research and his comprehensive analysis of social and economic factors affecting family well-being. Relying on the aid of local teachers, clergy, landholders, and so forth, and limiting his analysis to people who work, he would select a representative family for each occupation or area. To examine thoroughly all surroundings of the family and to gain confidence of family members, he lived with them. His observations and analysis of the data appeared in a series of monographs titled "Les Ouvriers Europeens" in 1878.

The period covered by the Le Play studies was from 1829 until his death in 1884. Some of his followers continued along similar lines to 1930. Le Play was impressed by cyclical fluctuations in the economic and social prosperity of peoples and tried to use his method of analysis to explain these phenomena. He seemed to find the chief explanation for these cyclical fluctuations in the social structure. The elements of social structure were numerous, but he paid particular attention to the family, the mores of a society, employment, labor unions, and the relations between the individual and the government. He looked upon each individual as a product of many factors in the social structure. He attempted to show that the well-being of the individual depends, to a considerable extent, upon the nature of the various lines and forces that bind the individual to the social structure. He believed

that a study of the family in its relation to the general social structure could largely explain the state of well-being of the family (Zimmerman & Frampton, 1935, pp. 85-86).

Christian Lorenz Ernest Engel (1821-1896), a German mining engineer and a student of Le Play in Paris, should be credited with extending the use of household budgets far beyond the description of households' living conditions. As a statistician, he saw the possibility of developing methods of measurement applicable to social behavior: They could serve as a means of measuring national welfare and of assessing comparative studies, population policies, and taxation programs. They could also be employed in solving theoretical economic problems such as the truth or falsity of the doctrine of Malthus and derivation of general laws of human behavior (Monroe, 1974).

From household accounts, he obtained data concerning family production and consumption and estimated the production and consumption of the country. From these findings, he drew conclusions regarding such things as the truth of the law of Malthus (the theory that population increases by geometrical progression while the means of subsistence increase in arithmetical progression) and what should be the country's population policy.

Engel also developed what may be the most famous study of the relationship between household income and expenditure on food. One of the main conclusions of his study is that as household income increases, the proportion of expenditures on food becomes less (Engel, 1857).

Expanding on the work of Le Play and Engel, Carroll Wright, then Commissioner of the Bureau of Labor Statistics of Massachusetts, conducted the first significant American household expenditure survey (Wright, 1875). In trying to relate the results of his survey to Engel's findings, Wright observed that as household income increased, the proportion of expenditures on food became less; the proportion of expenditures on clothing, rent, fuel, and light stayed the same; and those spent on sundries increased (Zimmerman, 1932).

Although Engel did not mention any item other than food in his laws, the form suggested by Wright is often referred to as Engel's law. By the 1870s, budget studies began to take on the characteristics of an organized area of investigation and increased in quantity and improved in quality. It was not, however, until the 1930s that income was analyzed systematically from the viewpoint of economic theory (Stigler, 1954).

During the 1880s, several important institutional developments took place in the United States. In 1862, the Morrill Act was passed, and the U.S. Department of Agriculture was established. The Morrill federal land grant act was introduced by Congressman Justin Smith Morrill of Vermont and signed by President Lincoln on July 2, 1862. The act enabled higher education to evolve from being a privilege of a minority to a right of the majority. The so-called land grant universities came to be recognized as *the people's universities*. The act authorized the establishment of a land grant institution in each state to educate citizens in agriculture, home economics, mechanical arts, and other practical professions (Liston, 1993).

The act was passed on August 30, 1890. Tuskegee University and 17 other institutions were federally funded through the act. Tuskegee University was created as Tuskegee Normal and Industrial Institute by an act of the Alabama legislature in 1881. Twelve years later, the state granted the university its independence and incorporated a semiprivate board of trustees to govern it. Thus, Tuskegee University is not a land grant institution, despite the fact that it was granted 25,000 acres of land by the U.S. Congress in 1899. However, because Tuskegee has espoused the land grant philosophy throughout its history, it traditionally has been associated with the 1890 land grant institutions (Liston, 1993).

In 1875, the first agricultural experiment station was established in Middletown, CT, for the purpose of addressing the problems of everyday life. The appointment of W. O. Atwater in 1875 as the first national agricultural experiment station director was historically significant for family economics. Atwater directed studies of food consumption of both rural and urban families through several state experiment stations. These dietary studies were important to family economists because some contain data on family income and expenditures and because the standards for adequacy of food consumption established in these early studies laid the foundation for the use of dietary adequacy as a means of assessing economic well-being (Helmick, 1986).

On March 2, 1887, a bill introduced by Congressmen William Henry Hatch of Missouri and Senator James George of Mississippi was passed. Known as the Hatch Act, it provided \$15,000 annually to establish agricultural experiment stations in connection with land grant institutions (Liston, 1993). Due to the Hatch Act and the tremendous research contributions and discoveries by the stations, the

mission of land grant institutions expanded from imparting information to creation of knowledge.

In 1908, under the leadership of Ellen H. Richards, the Ten Lake Placid Conference ended on December 31, 1908, with a decision to organize the American Home Economics Association (AHEA). In 1909, AHEA was established, and Richards became its first president (Liston, 1993).

The Smith-Lever Act introduced by Congressmen Hoke Smith of Georgia and Ausbury Lever of South Carolina was passed in 1914. It established the system of cooperative extension services to bring the general population the benefits of current development in the fields of agriculture, home economics, and related subjects. Federal funds were to be available in amounts not to exceed 50% of the cost of extension; the rest was to be provided by state, county, and local authorities. This mechanism of joint funding is in keeping with the term *cooperative extension*. The Smith-Lever Act expanded the mission of land grant institutions to include public service through outreach activities (Liston, 1993).

In 1923 and 1924, respectively, the Bureau of Agricultural Economics and the Bureau of Home Economics were set up in the U.S. Department of Agriculture (USDA). The latter was to examine problems related to home and family life. Although the budget of this bureau was mainly for federal research, occasional studies were made under contract with state experiment stations. The passage of the Purnell Act in 1925 made it possible for funds to be allocated specifically for state experiment station studies of the rural home and rural life. After passage of the act, there was a noticeable increase in the number of studies of farm family life. The studies were related to incomes and expenditures, time spent on household production, relative economies of specified data of household production versus purchase of food and clothing, selected problems and practices of household marketing, and examination of markets for consumer goods (Liston, 1993).

The State Agricultural Experiment Station (SAES) sponsored research that contributed greatly to evaluating work in the home with a series of investigations on time and energy. A survey of family living studies compared studies in the United States with the work of Le Play. During the period from 1920 to 1935, the SAES reported 47 studies of family living. The contributions of family economists including Kyrk, Duncan, Zimmerman, Dickens, Muse, Hoyt, and Gross were noticeable (Helmick, 1986).

Theory was seldom incorporated into the research literature during the early 1990s. Methodology consisted of interviews, personal assessments based on professional experiences, and questionnaires. Statistics were presented primarily in terms of frequencies, percentages, and simple group comparisons.

THE DECADE OF 1930-1939

A subdivision of the AHEA, Family Economics, was created in 1933 with Hazel Kyrk as a chairperson. A committee was assigned the task of developing a content outline, which was published in 1935 in the *Journal of Home Economics* (American Home Economics, 1935).

In 1936, the Bureau of Labor Statistics, the Bureau of Home Economics of USDA, and the National Works Progress Administration initiated the first nationwide survey of consumer income and expenditures (Helmick, 1986, p. 151).

The Great Depression and economic recovery dominated economic and social thought and inquiry in the 1930s. The American dream had become a nightmare. What was once the land of hope and optimism had become the land of despair; economics dominated politics. The Social Security Act of 1935 set up a program to ensure an income for the elderly. The Wagner Act of 1935 gave workers the legal right to unionize. The Congress of Industrial Organization (CIO) was founded, and conditions for blue-collar workers improved. By the beginning of the next decade, the country had gone from a laissez-faire economy that regulated its own affairs to large-scale federal oversight of the economy. The debate over which is the best course of action continues today (Kingwood College, 2001g).

In 1936, Keynes introduced theory that explained the circumstances that led to the Depression and suggested that social goals could be met through intervention in the economic system (Keynes, 1936). Research conducted in the 1930s focused on the effects of the Great Depression: unemployment, income and expenditure, credit use, determination of living standards, and women's employment. The period was characterized by a shift from research centered on work in the home to research centered on determining adequate living standards. These research studies resulted in analyses of family spending and saving patterns that would ultimately serve as the basic research on which poverty guidelines and family budgetary guidance would later be developed (Hefferan, 1986).

Slightly more than two thirds of research studies in this decade used primary data; the remaining used secondary data. Research was conducted primarily by survey research—either mailed questionnaires or interviews. The majority of the empirical articles during the 1930s were theoretically barren, and research findings were generally reported descriptively in the body of the text and in tables. Cross-classification of variables was common (Israelsen, 1991).

THE DECADE OF 1940-1949

World War II dominated family life in the 1940s. Marriage and divorce rates fluctuated as large numbers of men went off to war and then returned several years later. War production helped to pull the country out of the Depression. Unemployment, a phenomenon of the 1930s, almost disappeared because most men were drafted and sent off to war. Both single and married women joined the labor force to assist the war efforts by replacing men called to military duties and to support their families. Women's entrance into the labor force raised fears about the effect of working in the market on their performance of family roles, especially the care of children. Rationing due to the war that began in 1943 affected the food people ate, the clothes they wore, and the toys with which their children played (Kingwood College, 2001c).

Racial segregation threatened the war effort during times of labor scarcity; therefore, African Americans were admitted to the workforce on a much larger scale. African Americans who lived in the southern United States left their jobs on the farm and entered industrial employment. African American leader A. Philip Randolph persuaded President Roosevelt to issue an executive order that prohibited discrimination in federal and war industry jobs. Realization of the power of prejudice helped lead to civil rights reform over the next three decades (Kingwood College, 2001c).

The return of the veterans led to the baby boom, which is still having repercussions on American society. The Servicemen's Readjustment Act, commonly known as the GI Bill, entitled returning soldiers to a college education. In 1949, three times as many college degrees were conferred as in 1940. College education became available to the capable rather than to the privileged few (Kingwood College, 2001c).

Another important development during the decade of the 1940s was the passage of the Research and Marketing Act of 1946, which

provided funding and administration of research on family housing and several other dimensions of rural family life. It encouraged cooperation among state experiment stations for the study of similar or closely related problems (Davis, 1986).

The Flanigan-Hope Bill of 1947 (Research and Marketing Act) provided for funding and administration of research on family dimensions of rural life and encouraged cooperation among state experiment stations to study similar problems. Regional nonproject committees could be set up for the purpose of sharing ideas and information among researchers. The regional nonproject research committee devoted to family economics research, NCR-52, was organized in 1965 (Helmick, 1986).

Dominant research themes during the 1930s continued into the 1940s: studies of income and expenditure and standard of living. However, other research areas in this decade were related to the war, for example, money-saving efforts and buying war bonds, maintaining a reasonable standard of living despite reduction or unavailability of many consumer products, and the financial aspects of marital adjustment (Israelsen, 1991).

Theory was seldom incorporated in the research literature during this decade. Slightly more than half of the studies used primary data. Statistics were presented primarily in terms of frequencies, percentages, and simple group comparisons (Israelsen, 1991).

THE DECADE OF 1950-1959

The 1950s were a period of prosperity. Industry expanded to meet peacetime needs. Consumers began purchasing commodities not available during the war, which generated corporate expansion and full employment, allowing women to continue their movement into the labor force. In 1954, the Supreme Court ruled that racial segregation in public schools was unconstitutional. The American Federation of Labor (AFL) and the Congress of Industrial Organizations merged, making the new AFL-CIO in 1955. The federal Highway Act was signed in 1956, marking the beginning of work on the interstate highway system (Kingwood College, 2001b).

The focus of research, especially family economics, changed from an emphasis on basic needs that had dominated in the 1930s to research on economic and social wants. A majority of households had discretionary income and real choice-making ability. Duesenberry's

(1949) dissertation at the University of Michigan incorporated sociological behavior of consumer decisions. It introduced the relative income hypotheses that explained consumer choice. Katona (1951) introduced behavioral economics that combined economic and psychological principles of consumer behavior. Home management research began to focus on values and decision making (Cutler, 1947; Honey, Britton, & Hotchkiss, 1959; Van Bortel & Gross, 1954).

The issues of financial management, income and expenditure, security and retirement, housing, budgeting, saving, and marital adjustment comprised half of the research studies in the 1950s. Household research examined time allocation, household production, and household division of work. Additional topics that emerged during the 1950s included women's employment, adolescents and money, leisure, and decision making (Israelsen, 1991).

A broader array of research topics and theoretical orientations was investigated in the 1950s as compared with that of the 1940s, including role theory, exchange theory, and life-cycle theory. The overall quality of the research methodology (sample size, sampling procedures, description of variables, and association of variables) improved over previous decades. Interview was the most popular method of obtaining data. Seventy-five percent of studies in the decade used primary data, and 25% used secondary data. Statistics were still primarily descriptive, relying mainly on percentages and tabular cross-classification (Israelsen, 1991).

THE DECADE OF 1960-1969

The 1960s were years of rapid and extensive social change, much of which impacted family life. The country was engaged in the highly unpopular Vietnam War. The antiwar movement and sexual permissiveness introduced considerable challenges to traditional institutions and organizations. Growing diversity in individual and family lifestyles resulted in a multitude of different household living arrangements (Kingwood College, 2001f).

The civil rights movement contributed to a noticeable shift away from social constraints toward greater personal freedom. The Civil Rights Act of 1964 was amended to include gender. The women's rights movements had a major impact on family life as women continued their movement from home to labor force. Rachel Carson's (1962) book, *Silent Spring*, awakened the environmental movement, and

Ralph Nader's (1965) book, *Unsafe at Any Speed*, rejuvenated the consumer movement. The movement away from the conservative trend of the 1950s continued and eventually resulted in revolutionary ways of thinking and real changes in the cultural fabric of society (Kingwood College, 2001f).

Becker's (1965) path-breaking article on the theory of the allocation of time stirred controversy among home economists. Ferber and Birnbaum (1977) argued that Becker's "New Home Economics" model, in which significant amounts of productive activity are accomplished through exchanges that take place in the medium of time rather than in the medium of money is based on sexist and unrealistic assumptions. Becker's (1965) treatment of housework as a consumption activity and the issue of rationality in the allocation of time, the appropriateness of the family rather than the individual as the relevant unit of analysis, and the importance of life-cycle changes are issues that were debated by Ferber and Birnbaum (1977). However, the theory of New Home Economics inspired the next generation of researchers in our field to apply it to areas such as home production, division of labor, and human capital development.

The dominant research themes in the 1960s were women's employment, adolescents and money, financial security and management, decision making, insurance, economic support from family, expenditure, and household tasks (Israelsen, 1991).

The majority of research in the 1960s did not refer to theory, although some use of theory was evident, including life cycle, family development, economic, and role theories. Primary data collection methods through personal interviews or questionnaires were most often used (Israelsen, 1991).

Progress in statistical analyses was made in the 1960s with the movement beyond descriptive studies to employment of univariate and, to limited degree, multivariate techniques. Percentages and frequency tables, however, continued to be the most common statistical techniques used in data analysis (Israelsen, 1991). In 1967, the *Journal of Consumer Affairs* was launched.

THE DECADE OF 1970-1979

The 1970s witnessed a continuation of the sexual revolution, including the emergence of cohabiting as a semiacceptable lifestyle. Many of the radical ideas of the 1960s gained wider acceptance in the

1970s and were mainstreamed into American life and culture. Fertility dropped, age at marriage increased, and divorce rates continued to rise. In 1973, the *Roe versus Wade* Supreme Court decision legalized abortion (Kingwood College, 2001e).

In 1974, the worst economic recession in 40 years was triggered by the oil price inflation imposed by the Organization of Petroleum Exporting Countries. The U.S. Congress passed the Equal Rights Amendment, and the equal protection clause of the Fourteenth Amendment was applied to gender discrimination. In 1970, the first Earth Day was celebrated as the environmental movement was launched (Kingwood College, 2001e).

The values and decision-making emphasis continued into the 1960s and 1970s, with the added focus of integrating models of affective and instrumental family behavior (Ater & Deacon, 1972; Beard & Firebaugh, 1978; Hafstrom & Dunsing, 1973; Price, 1973). The environmental movement was also reflected philosophically in the ecosystem model (Hogan & Paolucci, 1979). The major legacy of this period was the systems approach to studying human resource behavior: Human resources are viewed as input in the process of achieving goals.

Prominent research areas in the 1970s were division of work in the home; household tasks; time usage and management; women's employment; energy; expenditure; consumer information, protection and redress; family financial resources; and debt and insurance. For a list of articles regarding these issues, see Abdel-Ghany and Nickols (1984).

Several theoretical orientations were evident in the research of this decade: system and ecosystem, economic, and role theories. The majority of studies, however, did not have a stated or implied theory. Use of statistical methods increased during the 1970s. As technological development reduced the cost and increased the capabilities of multivariate research, use of more sophisticated research methods increased. The major methodological advance during the 1970s was the testing of multivariate models with more powerful statistics such as multiple regression, factor analysis, multivariate analysis of variance, discriminant analysis, and multiple classification analysis. However, percentage tables, chi-square, and univariate analysis of variance were the most common statistical methods. Researchers frequently used national data sets during the decade. The Consumer Expenditure Survey, Panel of Income Dynamics, Food Expenditure

Survey, National Longitudinal Survey, and Consumer Credit Survey were among the most commonly used data sets (Abdel-Ghany & Nickols, 1984).

The 1970s witnessed an expansion of publishing outlets for professionals in the field. The *Home Economics Research Journal*, (currently the *Family and Consumer Sciences Research Journal*), *Journal of Consumer Research*, and *Journal of Consumer Studies and Home Economics* were launched in 1972, 1974, and 1977 respectively.

THE DECADE OF 1980-1989

The 1980s continued the trends of the 1960s and 1970s, with more focus on divorce, single-parent families, and cohabitation. However, the 1980s also witnessed a slowing, if not a turnaround, of some of the trends in family life of the previous decades. Premarital sexual activity, teenage pregnancy, out-of-wedlock births, and family violence leveled off, and some trends actually declined during the decade. The 1980s also witnessed a religious resurgence or awakening that called for a return to traditional family values (Kingwood College, 2001a).

The decade started with double-digit inflation, and Reagan economics was the trademark of economic policies during the decade. Binge buying and credit became a way of life. Hostile takeovers, leveraged buyouts, and megamergers were frequent occurrences. The stock market tripled in 7 years yet survived the 1987 crash. Toward the end of the decade, President Bush called for a kinder, gentler nation, and volunteerism and charitable contributions reached an all-time high. Science and technology made huge strides in the 1980s. Large numbers of Americans began using personal computers in their homes, offices, and schools (Kingwood College, 2001a).

Although there was not a substantive increase in the number of topical areas, there was a marked increase in research within the field in the 1980s. Major areas of research included women's labor force participation, time allocation and management, division of household work, household production, housing and energy conservation, financial management, adolescents and work, and studies of expenditure patterns (Israelsen, 1991).

Use of theory as a basis for research topics increased dramatically in this decade, with economic, role, and systems theories most prominent. Use of multivariate statistical procedures became the norm for

researchers during the 1980s. Multiple regression was the most frequently used method of analysis. Other statistical methods were percentage tables, correlation and contingency tables, analysis of variance, *t* test, chi-square, analysis of covariance, factor analysis, path analysis, discriminant analysis, Tobit analysis, logit analysis, and multiple classification analysis. There was a noticeable increase in the use of secondary data research studies. For a detailed assessment of research published in 1980s, see Reynolds and Abdel-Ghany (2001). Another publication outlet, *Lifestyles: Family and Economic Issues* (currently the *Journal of Family and Economic Issues*), was launched in 1980.

THE DECADE OF 1990-1999

The 1990s were undoubtedly the electronic age. The World Wide Web came to being in 1992, altering the way individuals communicate (e-mail), spend their money (online stores and auctions), and do business (e-commerce). During the 1990s, the American economy performed better than the economies of most countries. The booming economy led to record-low unemployment. The stock market reached an all-time high as individuals learned to trade via the Internet. Despite the economic boom of the 1990s, the growing trend of economic disparity among American families continued. The poor and middle class continued to get poorer and the rich to get richer (Kingwood College, 2001d).

There was a steady increase in the amount and quality of research during the decade of the 1990s. The methodology of the 1990s continued to increase in sophistication; researchers often used secondary national probability samples and longitudinal panel designs. Employment of multivariate techniques was widespread, including ones that were not used in previous decades, such as the double-hurdle model. For a detailed assessment of research published in 1990s, see Reynolds and Abdel-Ghany (2001).

The launching of the *Financial Counseling and Planning Journal* in 1990 contributed to the expansion of personal finance-related topical areas and the quantity of published research. Other topics that emerged in the 1990s included health care, income distribution, and the environment.

CONCLUSION

Over the decades, consumer scientists have made significant strides in research and have contributed immensely to the knowledge and understanding of individuals and families. They have demonstrated the ability to generate information useful to consumers, business, and government. To facilitate greater recognition of the research produced by consumer scientists in the future, attention should be given to relating findings to public policy.

Over the years, there has been increased research sophistication in relation to its methods and statistical analyses due to technological advances, which reduced the cost of and increased the capabilities of multivariate research.

Societal changes mandate that individual and collective research efforts should be channeled to predict and deal with repercussion of such changes. Cooperative research between the USDA and land grant institutions played a major role over the years in developing regional research projects to deal with important issues of the time. Leadership in setting priorities and agendas for research for the profession should be expanded and encouraged.

REFERENCES

- Abdel-Ghany, M., & Nickols, S. Y. (1984). Consumer, consumption, and family economics/household management research, 1972-82: Survey of the past and outlook for the future. *Home Economics Research Journal*, 12, 266-278.
- American Home Economics Association on Revision of the Syllabus (1935). Tentative revision of the syllabus of home economics. *Journal of Home Economics*, 28, 152-158.
- Ater, C. E., & Deacon, R. E. (1972). Interaction of family relationship qualities and managerial components. *Journal of Marriage and Family*, 34, 257-263.
- Beard, D., & Firebaugh, F. M. (1978). Morphostatic and morphogenic planning behavior in families: Development of a measurement instrument. *Home Economics Research Journal*, 6, 192-205.
- Becker, G. (1965). A theory of the allocation of time. *Economic Journal*, 75, 493-517.
- Carson, R. (1962). *Silent spring*. Boston: Houghton Mifflin.
- Cutler, V. F. (1947). *Personal and family values in the choice of a home*. Agriculture Experiment Station Bulletin No. 840, Ithaca, NY: Cornell University Press.
- Davies, D. (1795). *The case of labourers in husbandry stated and considered*. London.
- Davis, E. Y. (1986). Human resources research: Perspectives on the past and future. In R. E. Deacon & W. E. Wallace (Eds.), *Human Resources Research, 1887-1987. Proceedings*. Ames, IA: College of Home Economics, Iowa State University.

- Duesenberry, J. S. (1949). *Income, saving, and the theories of consumer behavior*. New York: Oxford University Press.
- Eden, F. M. (1797). *The state of the poor*. London.
- Engel, E. (1857). *Die productions und consumptions-verhaltnisse des konigreichs sachsen* (First published in *Zeitschrift des Statistischen Bureaus des Koniglich Sachsischen Ministeriums des Inners*, No. 8 and 9.)
- Ferber, M. A., & Birnbaum, B. G. (1977). The "new home economics:" Retrospects and prospects. *Journal of Consumer Research*, 4, 19-28.
- Gross, I. H., Crandall, E. W., & Knoll, M. M. (1980). *Management for modern families*. Englewood Cliffs, NJ: Prentice Hall.
- Hafstrom, J. L., & Dunsing, M. M. (1973). Level of living: Factors influencing the homemaker's satisfaction. *Home Economics Research Journal*, 2, 119-132.
- Hefferan, C. (1986). Human resources: Development in times of transition. In R. E. Deacon & W. E. Wallace (Eds.), *Human Resources Research, 1887-1987. Proceedings*. Ames, IA: College of Home Economics, Iowa State University.
- Helmick, S. A. (1986). Family as an economic unit: Research in times of transition. In R. E. Deacon & W. E. Wallace (Eds.), *Human Resources Research, 1887-1987. Proceedings*. Ames, IA: College of Home Economics, Iowa State University.
- Hogan, M. J., & Paolucci, B. (1979). Energy conservation, family values, household practices, and contextual variables. *Home Economics Research Journal*, 7, 210-218.
- Honey, R. R., Britton, V., & Hotchkiss, A. S. (1959). Decision-making in the use of family financial resources. *Agriculture Experiment Station Bulletin No. 643*, State College, PA: Pennsylvania State University.
- Israelsen, C. L. (1991). Family resource management. In S. J. Bahr (Ed.), *Family research: A sixty-year review, 1930-1990. Vol. 1*. Lexington, MA: Lexington Books.
- Katona, G. (1951). *Psychological analysis of economic behavior*. New York: McGraw-Hill.
- Keynes, J. M. (1936). *The general theory of employment, interest, and money*. New York: Harcourt, Brace, & World.
- Kingwood College. (2001a). *American cultural history* [online]. Available: <http://www.nhmccd.edu/contracts/lrc.kc/decade80.html>
- Kingwood College. (2001b). *American cultural history* [online]. Available: <http://www.nhmccd.edu/contracts/lrc.kc/decade50.html>
- Kingwood College. (2001c). *American cultural history* [online]. Available: <http://www.nhmccd.edu/contracts/lrc.kc/decade40.html>
- Kingwood College. (2001d). *American cultural history* [online]. Available: <http://www.nhmccd.edu/contracts/lrc.kc/decade90.html>
- Kingwood College. (2001e). *American cultural history* [online]. Available: <http://www.nhmccd.edu/contracts/lrc.kc/decade70.html>
- Kingwood College. (2001f). *American cultural history* [online]. Available: <http://www.nhmccd.edu/contracts/lrc.kc/decade60.html>
- Kingwood College. (2001g). *American cultural history* [online]. Available: <http://www.nhmccd.edu/contracts/lrc.kc/decade30.html>
- Le Play, F. (1878). *Les ouvriers Europeens*. (2nd ed.). Paris.
- Liston, M. I. (1993). *History of family economics research: 1862-1962*. Ames, IA: Iowa State University Research Foundation.
- Monroe, D. (1974). Pre-Engel studies and the work of Engel: The origins of consumption research. *Home Economics Research Journal*, 3(1), 43-63.
- Nader, R. (1965). *Unsafe at any speed*. New York: Grossman.

- Price, D. Z. (1973). Relationship of decision styles and self-actualization. *Home Economics Research Journal*, 2, 12-20.
- Reynolds, L. M., & Abdel-Ghany, M. (2001). Consumer sciences research: A two-decade comparison, 1980s and 1990s. *Family and Consumer Sciences Research Journal*, 29, 382-440.
- Ritchey, S. J. (1978). *Home economics research assessment, planning, and projections*. Blacksburg, VA: Virginia Polytechnic Institute and State University Press.
- Stigler, G. J. (1954). The early history of empirical studies of consumer behavior. *Journal of Political Economy*, 62(2), 95-113.
- Van Bortel, D. G., & Gross, I. H. (1954). *A comparison of home management in two socio-economic groups*. Agriculture Experiment Station Technical Bulletin No. 240, Ann Arbor, MI: Michigan State College.
- Wright, C. D. (1875). *Condition of workingmen's families*. Sixth Annual Report of the Massachusetts Bureau of Statistics of Labor. Boston: Bureau of Labor Statistics.
- Zimmerman, C. C. (1932). Ernest Engle's law of expenditures for food. *Quarterly Journal of Economics* 47, 78-101.
- Zimmerman, C. C., & Frampton, M. E. (1935). *Family and society: A study of the sociology of reconstruction*. New York: Van Nostrand Rienhold.

Housing, Equipment, and Design Research and Scholarship: A Family and Consumer Sciences Perspective

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Periodic reviews of research in the housing, equipment, and design specializations within family and consumer science have occurred in the past, documenting the status of research topics, methods, and theory. This article addresses research and scholarship in the housing, equipment, and design disciplines over the past 16 years by analyzing relevant publications with a family and consumer science perspective. Articles from three journals were analyzed to determine the number, university affiliation, topic, purpose, type, data collection, data analysis, and use of theory. Results indicate a decline in the total number of articles in these journals related to housing, equipment, and design. About one third of the articles utilized theory, and these articles used three theories frequently. Scholars in housing, equipment, and design should continue to publish in family and consumer science-related journals to continue the expansion and further the depth of these disciplines within the broader field.

The study of the near environment plays an integral and important part of understanding the influences on and interactions among individuals, families, and society. The human ecology framework presents the concept of the near environment as encompassing the basics of food, clothing, and shelter. Recently, the American Association of Family and Consumer Sciences (AAFCS) developed a proposed conceptual framework for the body of knowledge in family and consumer sciences that recognized the importance of these basic areas of the near environment by identifying cross-cutting and specialization threads (Baugher et al., 2000). Whereas cross-cutting threads presented concepts that are found in all areas of knowledge, the specialization threads focused on particular components of people's lives. For example, shelter was one of the specialization threads identified in the framework. This article will address the status of research and

scholarship in the housing, equipment, and design disciplines over the past 16 years by analyzing relevant publications with a family and consumer science perspective.

Various academic disciplines have become specializations that focus on particular areas of shelter. Housing has been one discipline that seeks to understand the relationship between people and their homes and community environments. Housing literature has a very broad range of topics, examining the house as a product and an investment for the consumer and as an economic and community resource. Household equipment has been another discipline that has been encompassed within the shelter component of the near environment, focusing on the interaction between individuals and the appliances or equipment that they use in their home. Design relates to the shelter specialization within family and consumer science and often focuses on the design of interior spaces and furnishings.

Several organizations represent the various disciplines that are being studied. AAFCS has organized its membership sections into several divisions: This article will focus on housing and environment. Although AAFCS is the broad professional organization that encompasses many areas, smaller organizations that represent specialized disciplines have been in existence for many years. The American Association of Housing Educators (AAHE) was established in 1967 to increase the effectiveness of housing education at all levels. The Association of Home Equipment Educators (AHEE) addresses programming related to household equipment. The Interior Design Educators Council (IDEC) was established in 1963 with a mission to advance education and research in interior design. The organizational statement of purpose indicates that it fosters the “development of the body of knowledge relative to the quality of life and human performance in the interior environment” (IDEC, 2000, p. 91). Each of these organizations has an orientation toward people and their interface with their environments. They also have goals to expand scientific knowledge associated with their respective disciplines. The publication outlets of these organizations were the source of analysis for this article.

Past Research

Research reviews have been completed at different times throughout the history of these disciplines. In 1953, Helen E. McCullough compiled the report, *Housing and Household Equipment Research in Home Economics: 1925-1950*. As part of a 50th anniversary of home

economics, McCullough (1959) continued to summarize the research in the housing area, and Beveridge (1959) reported on the household equipment research. McCullough (1959) concluded that home economists had made contributions in defining space use and standards, but the housing area needed to expand to other issues important to the country. Beveridge (1959) indicated that home equipment research had primarily focused on operating characteristics of various appliances but had been more general when it dealt with principles of operation, consumer decisions, and cost comparisons. She concluded that future equipment research on specific appliances should be done in conjunction with engineers and that equipment would continue to be interrelated with other areas such as housing, textiles, and foods.

At the time of the 75th anniversary of home economics in 1984, several reports were conducted to summarize the research related to housing and equipment. Brewer and Day (1984) examined housing literature between 1959 and 1982. They reviewed eight journals during this period, identifying 237 articles and categorizing them by topic. Almost half of the articles (47%) were related to design, examining both behavior and space use. Other topic areas were personal aspects of housing, special needs, social aspects, consumer economic decisions, and education. They conducted a more complete analysis of articles published between 1977 and 1982 by classifying the research by topic, typology, status, funding, methodology, duration, and status. Topics during this period were often related to energy (30%), special users (25%), and public policy (22%). Brewer and Day (1984) concluded that reliable instrumentation and measurement were needed, much of the research was being conducted as student work, and funding and dissemination sources were limitations to the development of the body of housing research.

Lovingood and Lytton (1984) examined household equipment research conducted from 1950 until the early 1980s. They reviewed lists of theses and dissertations, relevant journals, and proceedings from conferences. The authors reflected that records of household equipment research were incomplete. Most research had addressed consumer use of appliances, utilizing a physical science framework; however, some research was beginning to address social science issues. The authors identified several concerns associated with equipment research: lack of funding, faculty, and visibility.

Coveney and Hunt (1984) identified five themes that were evident in research and writings in housing, furnishings, and equipment

during the 75-year period of 1909-1984. The themes identified were the following:

- History provides understanding of the present;
- relationships exist between individuals, environments, and behaviors;
- design for human needs involves the analysis of individual environment and behavior relationships;
- environments relate to psychological and sociological factors; and
- economic factors influence choice and well-being.

A 1986 symposium on human resources research from 1887 to 1986 continued to analyze the direction of housing and environmental research. Weber, McCray, and Day (1986) reviewed eight journals from 1950 to 1985, as well as theses and dissertations during this time period, and identified eight major categories of research: energy, public policy, economic/marketing, special users/needs groups, housing conditions, design/construction, social/psychological, and environmental factors. The major areas of study were in the design/construction, social/psychological, and special users/needs areas. The design/construction area had been the focus in the early years of their study, whereas energy comprised a large portion of the research in the 1980-1985 period. Hanna (1986) responded to this analysis and noted that housing researchers tend to address current societal issues, but that because of the time needed to conduct research, the response often comes after the issue has passed.

Weber (1992) reported on housing research conducted by members of the American Association of Housing Educators during its 25-year history from 1965 to 1990. She analyzed the research that had been reported in the association's journal and conference proceedings. She reported increased use of theory to frame problems but said research was lagging behind issues that were being addressed by extension specialists and agents. For example, the energy crisis of the 1970s required fairly rapid dissemination of energy efficiency information to consumers. Information for extension programs was drawn from a variety of sources, including government agencies. Research conducted in the housing discipline related to this topic occurred later and examined issues such as the acceptance of alternative housing that was designed to be energy-efficient.

Eckman, Clemons, and Oliver (2001) conducted a content analysis of the *Journal of Interior Design Education and Research* and the *Journal of Interior Design* for the years 1975-1997. They analyzed 266 articles,

classifying them into three major types: research, editorial, and theory development. The authors found that 69% (183) were research articles, 20% (52) were editorial articles, and 11% (31) were theory development. In addition to classifying the articles into the major types, they identified 40 subject matter categories. The subject matter topics were distributed somewhat unevenly by type of article: 31 topics were addressed in research articles, 18 in editorials, and 14 in theory development.

Eckman et al. (2001) found that more than half of the articles addressed three topics: pedagogy (23%), history (12%), and professional practice (10%). They found that more than half of the articles (59%) were authored by one person; about one third (32%) had two authors. In all, there were 405 authors, some of whom published more than one article. Most authors were faculty and graduate students affiliated with 84 different colleges and universities. Twenty worked for private firms or historical societies. Most authors were American, but other countries were represented, including Canada, England, the Netherlands, Finland, Korea, and New Zealand. Authors affiliated with 20 universities accounted for publication of two thirds of the articles. They were led by University of Kentucky, University of Missouri, and University of Illinois, first, second, and third, respectively.

The research methods were mixed, with 30% (81) of the articles using quantitative methods, 19% (50) using qualitative methods, 28% (115) using a mixture of the two, and 40% (107) having the method not defined. Of the two most common subject matter topics, pedagogy and history, articles on pedagogy typically did not specify the methodology, whereas most articles addressing history used qualitative methods.

PURPOSE

The purpose of this article is to examine the status of research and scholarship in the housing, equipment, and design disciplines over the past 16 years by analyzing relevant publications with a family and consumer science perspective. A content analysis of articles in the journals of the American Association of Family and Consumer Sciences and the research journal of the AAHE was undertaken to determine topics, theories, research procedures, and statistical analysis. The AAHE does not have a journal, and the recent analysis of the

Journal of Interior Design would make further analysis of this journal redundant.

METHOD

The following journals were reviewed: *Home Economic Research Journal*, 1985-1994; *Family and Consumer Sciences Research Journal*, 1994-2000; *Journal of Home Economics*, 1985-1994; *Journal of Family and Consumer Sciences*, 1994-2000; and *Housing and Society*, 1985-1999. These journals were selected because they represent the main publication outlets focused on the family and consumer sciences perspective of housing, equipment, and design. Previous reports have examined other sources, such as conference proceedings, theses and dissertations, and related journals. The authors recognize that scholars in housing, equipment, and design may be publishing in a variety of other journals related to their disciplines that do not have a family and consumer sciences orientation. These scholars' work could not be easily discerned in these journals. Analysis of articles with a family and consumer science orientation in related journals was beyond the scope of this article, and a limited examination of dissemination sources was chosen. Each article in the three journals identified as relating to housing, equipment, and design was analyzed for the following content and information: length, university affiliation of first author, topic (general and specific), purpose, type, data collection method, data analysis, and theory.

FINDINGS

The review of the journals identified 333 articles related to housing, equipment, and design (see Table 1). Of this number, 224 (67%) were in *Housing and Society*, 100% of the articles published in the journal during this time. Sixty-three (19%) were from the *Home Economics Research Journal/Family and Consumer Sciences Research Journal*, 17% of the total number of articles in this journal during this time. Forty-six (14%) were from the *Journal of Home Economics/Journal of Family and Consumer Sciences*, about 10% of the articles in this journal during this time. The implementation of themed issues by the *Journal of Family and Consumer Sciences* may have influenced this percentage in recent years because an environment issue was not scheduled until 2001.

TABLE 1: Distribution of Journals

<i>Journal Title</i>	n	%
<i>Housing and Society</i>	224	67.3
<i>Family and Consumer Sciences Research Journal</i>	63	18.9
<i>Journal of Family and Consumer Sciences</i>	46	13.8
Total	333	100

TABLE 2: Frequency and Percentage of Articles by 5-Year Increment

<i>Period</i>	n	%
1985-1990	150	45.1
1991-1995	119	35.7
1996-2000	64	19.2
Total	333	100

The average number of pages for the articles was 11 pages, with the minimum number being three pages and the maximum number being 27.

The publications were examined by 5-year increments. The number of articles has declined from 150 during the 1985-1990 period (6 years) to just 64 during the 1996-2000 period (5-year period) (see Table 2). The extra year increased the number in the earlier period, and the 2000 edition of *Housing and Society* was not in press at the time of this analysis. Even with these limitations, the number of articles would seem to have declined substantially.

University Affiliation

The first authors of the articles were affiliated with a number of universities. There were 333 authors cited for the various articles (see Table 3). Eight percent of these authors were affiliated with Virginia Polytechnic Institute and State University, 8% with the University of Nebraska, and 6% with Iowa State University. Other universities mentioned 10 or more times are University of Minnesota, Oklahoma State University, University of Georgia, Colorado State University, Ohio State University, and Illinois State University. These universities do not duplicate the universities represented in the analysis of the *Journal of Interior Design*.

TABLE 3: Frequency and Percentage of First Author by Institution

<i>Institution</i>	n	%
Virginia Polytechnic Institute and State University	27	8.1
University of Nebraska	26	7.8
Iowa State University	21	6.3
University of Minnesota	18	5.4
Oklahoma State University	11	3.3
Illinois State University	11	3.3
University of Georgia	10	3.0
Ohio State University	10	3.0
Oregon State University	8	2.4
Utah State University	8	2.4
Colorado State University	7	2.1
University of Missouri	7	2.1
Cornell University	7	2.1
East Carolina University	6	1.8
Miami University	6	1.8
Florida State University	6	1.8
Kansas State University	5	1.5
University of Idaho	5	1.5
Auburn University	5	1.5
Louisiana State University	4	1.2
McGill University	4	1.2
North Carolina University	4	1.2
Texas Tech University	4	1.2
Other (government center, etc.)	113	33.9
Total	333	100

Topics

The overwhelming majority of articles were housing-related (82.2%). This is not surprising considering the large number of articles from *Housing and Society* classified as housing (64%) (see Table 4). However, in the *Family and Consumer Science Research Journal*, almost as many equipment articles (27) as housing articles (29) were published. This journal is a major publication outlet for equipment research; only 29 articles were equipment-related. Only 31 articles were classified as design, and these were found in all three journals.

The topics were examined to determine more specific issues and problems addressed in the articles. Brewer and Day (1984), Weber (1992), and Weber, McCray, and Day (1986) did not use the same categories to classify housing research. The current study borrowed some of the headings from these studies and created some that fit the varied

TABLE 4: Frequency and Percentage of Articles by General Topic and Journal

<i>Journal Title</i>	<i>Topics</i>			<i>Total</i>
	<i>Housing</i>	<i>Design</i>	<i>Equipment</i>	
<i>Housing and Society</i>	214 (64.3%)	10 (3%)	0 (0%)	224 (67.3%)
<i>Family and Consumer Sciences Research Journal</i>	29 (8.7%)	7 (2.1%)	27 (8.1%)	63 (18.9%)
<i>Journal of Family and Consumer Sciences</i>	30 (9.0%)	14 (4.2%)	2 (0.6%)	46 (13.8%)
Total	273 (82.2%)	31 (9.3%)	29 (8.7%)	333 (100%)

work being completed during this time period. Classifying studies by only one main heading was difficult because many articles addressed several issues. Researchers attempted to classify the article by the primary focus, while at the same time reporting as few categories as possible. The categories are the following:

1. Perception (satisfaction, preferences, deficit, expectation)
2. Behaviors (adjustment, adaptation, adoption, repair/maintenance, mobility, space use, work at home)
3. Older adults (retirement communities, design)
4. Educational programs (teaching and outreach)
5. Energy (solar housing, cooking)
6. Special users (homeless, Alzheimer's, mentally ill people, children, disabled people)
7. Policy (homeownership, affordability, housing quality)
8. Environment (indoor air quality, lead, water quality)
9. Property management (tenants, public housing)
10. Methodology (data collection, data analysis methods)
11. Other (alternative housing, international housing, kitchen design, etc.)

The categories divided the housing, design, and equipment studies across several areas depending on focus. For instance, a study about assisted living housing design could be classified under older adults, whereas another study evaluating the design of apartment housing by satisfaction measures could be classified as a perception study.

Slightly less than one fourth of the articles (23%) were classified as perception studies (see Table 5). Thirteen percent were classified as behavior-type studies, and 11% were studies related to older adults. Other topics were related to educational programming (9%), energy

TABLE 5: Frequency and Percentage of Articles by Topic

<i>Topic</i>	n	%
Perception	77	23.1
Behaviors	44	13.2
Older adults	38	11.4
Educational programs	29	8.7
Energy	27	8.1
Special groups	23	6.9
Policy	22	6.6
Environmental issues	13	3.9
Property management	7	2.1
Methodology	7	2.1
Other	46	13.8
Total	333	100

(8%), special groups (7%), and policy (7%). Smaller numbers were related to environmental issues, property management, and methodology. Eckman et al. (2001) indicated that a large portion of the articles in the *Journal of Interior Design* were related to pedagogy (23%), and in fact, several of the educational programming articles were also analysis of teaching practices in interior design.

When the topics were analyzed by the 5-year increments, variations were identified (see Figure 1). Perception studies continued to rise, accounting for 27% of the articles in the 1995-2000 period. Articles dealing with older adults, special users, and policy were more frequent in the 1991-1995 period. Although articles dealing with energy were frequent in the 1985-1990 period, those dealing with environmental issues were more frequent in the 1995-2000 period. Articles related to educational programs also increased in the latest period.

The topics covered in these journals relate to the cross-cutting threads identified by Baugher et al. (2000) in the conceptual framework for the body of knowledge in family and consumer sciences. For example, many of the articles classified as being perception, behaviors, older adults, and special users reflected a concern with basic human needs. Educational program articles dealt with communication skills. Policy articles were related to the public policy thread, and energy and environment articles were often related to the technology thread. Articles within several of the categories could be classified as dealing with the global perspective, diversity, and community development threads. Further analysis of the articles in relation to the cross-cutting threads would be a useful future undertaking.

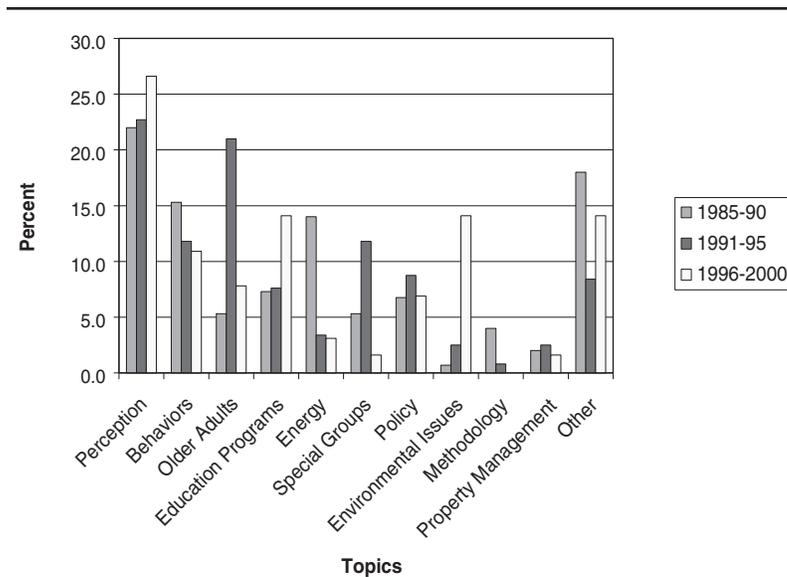


Figure 1: Topics by 5-year period.

TABLE 6: Frequency and Percentage of Articles by Purpose of Research

Purpose of Research	n	%
Analysis	207	62.2
Exploration	32	9.6
Evaluation	23	6.9
Description	18	5.4
Other	53	15.9
Total	333	100

Purpose

The stated purposes of the articles were examined and classified (see Table 6). Most of the articles reported a purpose of analysis (62%), whereas a few reported a purpose of exploration (10%), evaluation (7%), or description (5%). This seems to reflect a maturing of the fields because much of the research in earlier reports was descriptive and exploratory.

TABLE 7: Frequency and Percentage of Articles by Type of Research

<i>Type of Research</i>	n	%
Quantitative	231	69.4
Qualitative	29	8.7
Quantitative/qualitative	7	2.1
Other	66	19.8
Total	333	100

TABLE 8: Frequency and Percentage of Data-Collection Methods in Articles

<i>Data Collection Method</i>	n	%
Mail questionnaire	117	33.9
Document	56	16.2
Data set	43	12.5
Personal interview	42	12.2
Experiment/quasi-experiment	30	8.7
Telephone interview	24	7.0
Observation/site visiting	15	4.3
Case study	9	2.6
Focus group	4	1.2
Other (videotaping, etc.)	5	1.5
Total	345	100

Type

A large portion of the research presented was classified as quantitative (71%), whereas only 9% was qualitative (see Table 7). Almost 20% were classified as other, reflecting many of the articles that did not report on a research project. Some articles reported on issues and programs and could not be classified by research type.

Data Collection

A variety of data collection techniques were reported in the studies that were examined. There were 345 techniques reported in the articles (see Table 8). One third of those reporting data collection used a mailed questionnaire, whereas 16% used documents, 13% used data sets, and 12% used personal interviews. Experiments were conducted in 9% of the articles, almost all of which were in the equipment area.

TABLE 9: Frequency and Percentage of Data Analysis Techniques in Articles

<i>Data Analysis</i>	n	%
Descriptive	187	36.8
Regression	57	11.2
Analysis of variance	46	9.1
Chi-square	43	8.5
Correlation	42	8.3
<i>t</i> test	37	7.3
Factor analysis	13	2.6
Content analysis	12	2.4
Discriminate analysis	9	1.8
Path analysis	9	1.8
Logistic regression	8	1.6
Other (general linear model, cluster analysis, probit analysis, multivariate analysis of variance, multiple classification analysis, etc.)	35	8.9
Total	508	100

Telephone interviews were used in 7% of the articles, and some qualitative methods such as observations, case studies, and focus groups were used.

Data Analysis

The research often utilized several different types of analysis: 508 analyses were reported. More than a third of these were descriptive, the most common analysis used (see Table 9). However, inferential analysis was also used, such as regression (11%) and analysis of variance (9%). Chi-square (9%), correlation (8%), and *t* test (7%) are explanatory and were used in several studies. Research in these subject areas is growing in sophistication and inclination to explain relationships.

Theory

Only a third of the articles examined cited theories or theoretical frameworks (see Table 10). Because many articles were not research articles, this was anticipated. Morris and Winter's (1978) Housing Adjustment Theory was mentioned in 36 (35%) of these articles. The Person-Environment Fit and Ecological Models (Kahana, 1982; Lawton & Nahemow, 1973) were cited in 17% of the articles, and the

TABLE 10: Frequency and Percentage of Theoretical Frameworks in Articles

<i>Theoretical Framework</i>	n	%
Housing adjustment theory	36	35.0
Person–environment fit/ecological model	17	16.5
Diffusion of innovation	9	8.7
Hierarchy of human needs	3	2.9
Other (energy adoption model, choice selection, consumer efficiency theory, continuing theory of aging, mobility model, model of amenity migration progress, psychological attachment to home, risk theory, human ecosystem model, elderly migration, activity theory, migration decision theory, etc.)	38	36.9
Total	103	100

Diffusion of Innovation Theory (Rogers, 1983) was cited in 9%. Other theories were cited much less frequently, with many theories being cited only once.

The most frequently used theories have a human behavioral focus, and in fact, seem to be related to decisions made by consumers. The Housing Adjustment Model explains household decisions to move or alter housing. The Person-Environment Fit /Ecological Models are most often used to explain the need to change housing in relation to internal and external conditions. The Diffusion of Innovation is used to explain the acceptance and adoption of new products and methods. The Hierarchy of Human Needs (Maslow, 1970) also seeks to explain an interface between people and their environments. All of these theories seem to fit with the body of knowledge in family and consumer sciences because they focus on shelter issues as they relate to people and their family and community systems.

CONCLUSIONS

Several important trends are evident from the review of the three journals during the last 15 years. Most of the articles address housing. The inclusion of *Housing and Society*, a journal devoted exclusively to housing issues, influences this result. However, when only the family and consumer science journals are reviewed, housing still predominated. The housing area is very broad and includes a wide range of topics, whereas equipment is more narrowly focused, and much of

the design literature is found outside of family and consumer science publications.

Research topics have continued to focus on the perception of environments, including topics related to satisfaction. Several topics seem to have fluctuated in importance depending on the societal issues that are being addressed. Energy, older adults, and environmental issues reflect these trends over time. The three journals analyzed included many articles related to educational programming, including extension programs. Some special issues of *Housing and Society* included many educational programming articles. Also, several of the design articles analyzed teaching strategies and course content. Because the writers and researchers in these areas are usually in educational settings, it is appropriate that they address the content and teaching strategies associated with their disciplines.

Data analysis and use of theory have become more sophisticated when compared with earlier assessments. Although descriptive studies still dominated, studies also used inferential statistics. And, although the Housing Adjustment Model (Morris & Winter, 1978) was used most frequently, the person–environment fit/ecological models and the diffusion of innovation theory were used substantially. These theoretical models address specific shelter issues, but they do it in a manner that is consistent with the body of knowledge in family and consumer sciences. Researchers need to continue to address theory and to adapt theory to the housing, design, and equipment areas. Publishing theory-based articles in journals with a family and consumer science basis may help to further the development of theory and knowledge among peer scholars. The use of theory to conduct complex research studies may also encourage family and consumer scientists in the housing, design, and equipment areas to publish in journals related to other base disciplines, thereby bringing the family and consumer science perspective to these fields.

The decline in the number of articles published over the years is a concern for the continued growth of the disciplines within family and consumer sciences. Other outlets for publication have opened up for researchers in the housing and design areas, and publishing in diverse journals is often encouraged in the tenure and promotion process at most universities. Publishing in diverse journals may also bring a family and consumer science perspective to housing, equipment, and design issues covered by other disciplines. However, researchers need to recognize the journals of their professional organizations as important outlets for the continued development of their

disciplines. Targeting publications suitable to the audiences of these journals would provide recognition of the disciplines by peers and others in the entire family and consumer science field.

REFERENCES

- Baughner, S. L., Anderson, C. L., Green, K.B., Nickols, S. Y., Shane, J., Jolly, L., & Miles, J. (2000). Body of knowledge of family and consumer sciences. *Journal of Family and Consumer Sciences*, 92(3), 29-33.
- Beveridge, E. (1959) The contribution of household equipment research. *Journal of Home Economics*, 51, 858-860.
- Brewer, G. J., & Day, S. S. (1984). Housing research in home economics: 1959-1982. *Home Economics Research Journal*, 12, 291-299.
- Coveney, A., & Hunt, F. (1984). Research and thought in housing, furnishings, and equipment: 1909-1984 five selected themes. In *Definitive themes in home economics and their impact on families 1909-1984*. Washington, DC: American Home Economics Association.
- Eckman, M., Clemons, S., & Oliver, B. (2001). An empirical analysis of the *Journal of Interior Design*. *Journal of Interior Design*, 27 (2).
- Hanna, S. (1986). Discussion. In R. E. Deacon & W. E. Huffman (Eds.), *Human Resources Research, 1887-1987: Proceedings*. Ames, IA: College of Home Economics, Iowa State University.
- Interior Design Educators Council. (2000). *Journal of Interior Design*, 26(2), 91.
- Kahana, E. (1982). A congruence model of person-environment interaction. In M. P. Lawton, P. G. Windley, & T. O. Byerts (Eds.), *Aging and the environment: Theoretical approaches*. New York: Springer.
- Lawton, M. P., & Nahemow, L. (1973). Ecology and the aging process. In C. Eisdorfer & M. P. Lawton (Eds.), *Psychology of adult development and aging*. Washington, DC: American Psychological Association.
- Lovingood, R. P., & Lytton, R. H. (1984). Household equipment research: Past accomplishments, challenges for the future. *Home Economics Research Journal*, 12(3), 279-290.
- Maslow, A. (1970). *Motivation and personality* (2nd ed.). New York: Harper & Row.
- McCullough, H. E. (1953). *Housing and household equipment research in home economics: 1925-1950*. Circular 712. Urbana, IL: University of Illinois Agricultural Experiment Station.
- McCullough, H. E. (1959). Housing research in home economics. *Journal of Home Economics*, 51(10), 853-857.
- Morris, E. W., & Winter, M. (1978). *Housing, family, and society*. New York: John Wiley.
- Rogers, E. M. (1983). *Diffusion of innovation*. New York: Free Press.
- Weber, M. J. (1992). Through the years . . . AAHE, housing problems and change: A research perspective. *Housing and Society*, 18(2), 5-10.
- Weber, M. J., McCray, J. W., & Day, S. S. (1986). Historical perspectives on housing research: Foci, methods and contributions. In R. E. Deacon & W. E. Huffman (Eds.), *Human Resources Research, 1887-1987: Proceeding*. Ames IA: College of Home Economics, Iowa State University.

Research in Family and Consumer Sciences Education, 1985-2000

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This review addresses significant events that have influenced research in family and consumer sciences education, major publication outlets, leading researchers, problems studied, methodologies used, and a summary of thesis and dissertation research completed from 1985 to 1999. Nearly three fourths of the 237 research articles reviewed were published in the Journal of Family and Consumer Sciences Education. Research topics focused primarily on professional roles and characteristics of family and consumer sciences educators, program evaluation, and priority issues including the need for family and consumer sciences teachers. Collaborative research efforts, focus on critical issues in family and consumer sciences education, use of interpretive frameworks and qualitative methods, and progress in using theory are cited as strengths. Challenges for future research include avoiding overreliance on empirical and survey methods, strengthening interaction between research and theory, increasing the number of individuals engaged in research on a continuing basis, and strengthening graduate student research.

Research in family and consumer sciences (home economics) education (FCSE) had its origins at Columbia University where the first master's thesis was awarded in 1906, followed by the first doctoral dissertation in 1918. These events are documented by Lehman (1960) in a summary of the first 50 years of home economics education research. Lehman also noted that prior to 1920, home economics education research was reported by the University of Chicago, Colorado State Teachers College, Stanford University, and George Peabody College for Teachers. By 1936, almost 800 home economics education research studies were reported by 54 institutions. Most were master's theses, and relatively few were published. Ten universities were responsible for more than half of these studies: Iowa State University,

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Columbia University, University of Chicago, George Peabody University, University of Southern California, University of Minnesota, Ohio State University, University of Tennessee, Colorado State University, and Kansas State University. Research during these early years focused on the history of domestic science, the status of home economics teacher training, college courses of study, and content areas such as clothing and textiles, foods, and child development (Lehman, 1960).

According to Lehman (1960), three significant events occurred in the 1930s that spurred the growth of home economics education research over the next several decades. These events were the appointment of the first home economics education research specialist in the U.S. Office of Education in 1930, concerns raised by Clara Brown's critique of research in the field at the 1937 American Home Economics Association (AHEA) Annual Meeting, and the passage of the 1937 George Dean Act, which provided federal research funds for vocational education, including home economics.

Since Lehman's 1960 summary, a number of reviews have documented the history of research in family and consumer sciences (home economics) education through the mid 1980s (Bailey, 1971; Chadderdon & Fanslow, 1966; Clawson, 1981; Nelson, 1979; Redick, et al., 1986; Wallace & Hall, 1984). In their 1984 review, Wallace and Hall cited strengths of home economics education research, including increased opportunities for the dissemination of research results, collaboration between researchers in home economics education and related fields, and the leadership for research and graduate education provided by a variety of institutions. Shortcomings that have been identified include an overreliance on empirical modes of inquiry, particularly survey methods; failure to connect research to theory; a limited number of professionals engaged in research activity on a continuing basis; and a lack of focus (Clawson & Morgan, 1988; McCullers, 1984; Wallace & Hall, 1984).

The purpose of this article is to review research completed in family and consumer sciences education (FCSE) from 1985 to the present. The review addresses significant events that have influenced research activity, major publication outlets, leading researchers, research problems studied, and research methodologies used. Also included is a summary of thesis and dissertation research completed from 1985 to 1999.

SIGNIFICANT EVENTS INFLUENCING RESEARCH IN FCSE

Recent events that have contributed to FCSE research efforts include the leadership provided by the Home Economics Research Committee of the American Vocational Association (AVA), publication of the AHEA Teacher Education Yearbooks, and the 1983 launching of the *Journal of Vocational Home Economics Education (JVHEE)*.

The AVA Home Economics Research Committee was established in 1978 to identify research priorities for the field and to plan ways to address these needs. Initial efforts focused on a series of studies to evaluate the effectiveness of secondary consumer and homemaking programs (Wallace & Hall, 1984). In recent years, the committee has operated through subcommittees organized to study specific priority issues. The committee also has conducted a number of research pre-sessions prior to annual meetings to provide professional development opportunities for FCSE researchers. These sessions have focused on topics such as thinking skills, feminist research, national standards, teacher supply and demand, and action research. The committee currently operates as the Family and Consumer Sciences Research Committee of the Association for Career and Technical Education (ACTE).

AHEA began publishing Home Economics Teacher Education Yearbooks in 1981. McKnight Publishing Company was the original yearbook sponsor; currently the costs are underwritten by Glencoe/McGraw-Hill. The yearbooks are designed to provide information on a variety of topics and issues important to the field, and although they are not exclusively research-based, many chapters report original research that may not be published elsewhere. Yearbooks 5-20, 1985-2000, include more than 30 research-based chapters focusing on topics such as the interrelationships of work and family, assessment of practical reasoning skills, and curriculum development and evaluation. Two yearbooks published during this time deserve special mention because they contributed significantly to the advancement of research in FCSE. These are Yearbook 9, *Alternative Modes of Inquiry in Home Economics* (Hultgren & Coomer, 1989), and Yearbook 16, *Review and Synthesis of Family and Consumer Sciences Education Research, 1985-1995* (Redick, 1996).

The premise of Yearbook 9 is that different problems require different research approaches. In the introduction, Hultgren and Coomer (1989) point out that the dominant research paradigm is based on a

positivist natural science model and is inadequate to address all research questions in the social/human sciences. The editors propose three research paradigms, based on Habermas' (1971, cited in Hultgren & Coomer, 1989) *Comprehensive Theory of Knowledge: empirical/analytic, interpretive, and critical science*.

The aims of empirical/analytic inquiry are to develop universal laws, formulate theories, explain causes and effects of behavior, and control social phenomena in a technical sense (Zimmerman, 1989). According to Zimmerman, the empirical/analytic approach assumes that human behavior is observable, quantifiable, and objective.

Hultgren (1989) describes the interpretive approach to research as a search for meaning in everyday experiences. Its aim is "understanding aspects of human cultural activity and experience from the perspective of those living through the experience" (p. 41).

The critical science perspective integrates research from both empirical and interpretive approaches and permits examination of the way things are in contrast to the way things could or should be. It requires the researcher to become a participant in the research setting and strengthens the interaction between research and practice. (Coomer, 1989).

Yearbook 16 summarized FCSE research from historical perspective, provided an overview of the research designs and methodologies used by FCSE researchers, and reviewed the research from 1985 to 1995 in four categories: the field of family and consumer sciences education, programming in family and consumer sciences education, specific family and consumer sciences content areas, and priority issues in family and consumer sciences education. The priority issues included middle/junior high school programs, higher order thinking, families and work, computers and technology, basic skills, gender equity, learners at risk, entrepreneurship, and Future Homemakers of America/Home Economics-Related Occupations (FHA/HERO) (Redick, 1996).

MAJOR PUBLICATION OUTLETS

Family and consumer sciences education research is published in a variety of journals. This review includes the research published in four major outlets: the *Journal of Family and Consumer Sciences Education (JFCSE)*, the *Journal of Family and Consumer Sciences (JFCS)*, the *Family and Consumer Sciences Research Journal (FCSRJ)*, and the *Journal*

TABLE 1: Major Outlets for the Publication of FCSE Research

<i>Journal</i>	<i>Dates/ Volumes</i>	<i>No. of Articles</i>
<i>Journal of Family and Consumer Sciences Education</i>	1983-1999 ^a Vols. 1-17	182
<i>Journal of Family and Consumer Sciences</i>	1985-2000 Vols. 77-92	28
<i>Family and Consumer Sciences Research Journal</i>	1985-2000 Vols. 14-29 ^b	18
<i>Journal of Vocational Education Research</i>	1985-2000 Vols. 11-25 ^c	9

NOTE: FCSE = family and consumer sciences education.

a. Volume 18 (2000) not published at time of writing.

b. Only Issues 1 and 2 of Volume 29 included.

c. Only Issue 1 of Volume 25 included.

of *Vocational Education Research (JVER)*. Two of these, *JVER* and *FCSRJ*, were identified by Wallace and Hall (1984) as journals accounting for a significant portion of published research in home economics education. *JFCSE* was founded in 1983 as the *Journal of Vocational Home Economics Education* for the intended purpose of serving as the primary outlet for publication of research. *JFCS* was included in this review because it is a benefit of membership in American Association of Family and Consumer Sciences (AAFCS) and has a wide circulation. *JFCS* currently publishes original research as part of its scholarship and practice section. A summary of the FCSE research published in these four journals for the period under review is found in Table 1.

The *Journal of Vocational Home Economics Education* was first published in 1983 and became the *Journal of Family and Consumer Sciences Education (JFCSE)* in 1995. As shown in Table 1, 182 articles based on original research were published in the first 17 volumes, 1983-1999 (Clawson & Morgan, 1988; Couch & Felstehausen, 1994; Felstehausen & Couch, in press).

Of the remaining research articles, 28 were published in *JFCS*, 18 in *FCSRJ*, and 9 in *JVER* (see Table 1). FCSE researchers also authored or co-authored a number of studies published in *JVER*, which included an FCSE component within the broader context of career and technical education. In addition, it is important to note that each of the four journals reviewed for this article publishes both original research and other types of scholarly articles. For example, 24 articles published in *JFCSE* (volumes 1-17), addressed research design and methodology,

six of which were published in a special issue on alternative research frameworks (volume 3, issue 1).

LEADING RESEARCHERS

More than 270 individuals authored or co-authored the 237 research reports identified in Table 1. The authors were family and consumer sciences educators, including teacher educators, graduate students, and secondary teachers; university faculty in family and consumer sciences content areas; and educators in fields other than family and consumer sciences.

Sixteen researchers authored or co-authored six or more articles: Penny Burge, Barbara Clawson, Sue Couch, Alice Fanslow, Ginny Felstehausen, Helen Hall, Melinda Holcombe, Julie Johnson, Cheryl Lee, Ruth Martin, Ruth Pestle, Sharon Redick, Jerelyn Schultz, Frances Smith, Daisy Stewart, and Wendy Way. The institutions represented by the authors include Appalachian State University, Florida State University, Iowa State University, Ohio State University, Texas Tech University, University of Georgia, University of Nebraska–Lincoln, University of North Carolina–Greensboro, University of Wisconsin–Madison, and Virginia Polytechnic Institute and State University. With some exceptions (e.g., retirees, new professionals), these researchers were engaged in research throughout the 15-year period, and most published in more than one of the four journals reviewed.

It is important to acknowledge that research leadership is not tied exclusively to the quantity of publications. In addition to publishing their own research, many of these individuals as well as a number of others have made significant contributions to FCSE research and scholarship in a variety of ways. These contributions have included serving as journal editors, associate editors, reviewers and editorial board members; publishing articles on research design and methodology; providing leadership for ACTE research pre-sessions; serving as members of the ACTE Family and Consumer Sciences Research Committee; and directing graduate student research.

RESEARCH PROBLEMS ADDRESSED

A modified form of the outline utilized by Redick (1996) in AAFCS Teacher Education Yearbook 16, *Review and Synthesis of Family and*

Consumer Sciences Education Research, 1985-1995, served as the framework for describing the research problems addressed.

Research Design in Family and Consumer Sciences Education

Only three of the 237 research articles fit this category, all published in *JFCSE*. Two focused on the development of assessment instruments, and the third described the use of focus group techniques as a data collection strategy. As noted earlier, *JFCSE* published an additional 24 articles related to research design and methodology that were not based on original research.

The Field of Family and Consumer Sciences Education

Seventy-four articles, 31% of the total, related to the profession of family and consumer sciences education. Various topics were addressed, including professional roles and characteristics of family and consumer sciences educators, pre-service and in-service professional development needs, public relations and image issues, induction of beginning teachers, and teacher education reform. Professional issues were somewhat more likely to be addressed in *JFCSE* and *JVER* than in either *JFCS* or *FCSRJ*.

Programming in Family and Consumer Sciences Education

Nearly half of the 237 research articles addressed topics related to FCSE programs. Programming issues accounted for a significant portion of the studies reviewed in each the four journals, *JFCS*, (68%); *JFCSE*, (46%); *FCSRJ*, (50%); and *JVER*, (33%). A majority of these studies focused on the evaluation of secondary programs and/or courses, including nutrition education, financial management/consumer education, aging education, programs designed for teen parents, and other parenting and family life education programs. Also included were several evaluation studies of extension programs in family and consumer sciences. Other studies in this broad category related to international home economics programs, needs and characteristics of learners, learning styles, teen theft in schools, and curricular issues such as multiculturalism and the teaching of ethics.

Priority Issues in Family and Consumer Sciences Education

A total of 46 articles (19%) reflected FCSE priority research issues. Of the priority issues identified by Redick (1996), the ones most frequently addressed were work and family relationships (10), technology (6), integrating basic skills (5), gender equity (3), entrepreneurship (3), and FHA/HERO (3). The critical need for family and consumer sciences teachers, a priority issue identified by the AAFCS Senate in 1996, was the focus of seven studies; all but one were published in *JFCSE*.

RESEARCH DESIGN AND METHODOLOGY

The three research paradigms described in AHEA Yearbook 9, *Alternative Modes of Inquiry* (Hultgren & Coomer, 1989), formed the basis for classifying research designs used by FCSE researchers. A classification system proposed by Gay and Airasian (2000) was used to further describe specific methods of data collection and analysis. Gay and Airasian (2000) classify research methods as traditional/quantitative, including descriptive and experimental; qualitative, which involves the collection and analysis of extensive narrative data in naturalistic settings; and historical, which may have both quantitative and qualitative components. In addition, research designs were examined to determine the extent to which FCSE researchers utilize theory

Modes of Inquiry

Of the 237 published research articles documented in Table 1, 197 (83%) were categorized as empirical/analytic, 30 (13%) as interpretive, 8 (3%) as both empirical/analytic and interpretive, and only 2 (< 1%) as critical science. The empirical/analytic approach was particularly prominent in *FCSRJ*, with 94% of the published studies utilizing this mode, compared with 84% in *JFCSE*, 77% in *JVER*, and 75% in *JFCS*.

Traditional quantitative methods were used in all of the empirical/analytic studies. The majority (89%) of these were descriptive; 11% were experimental or pre-experimental. Thirty (13%) of the studies

utilized qualitative methodology, and several combined quantitative and qualitative methods. The historical method was used sparingly.

The survey was the most frequently used method of data collection with about 70% of the studies reporting that data were collected in this manner. The dominance of survey research was apparent in each of the four journals reviewed. Other methods of data collection included face-to-face and telephone interviews, focus groups, analysis of documents, case studies, and for some of the experimental studies, pre- and posttests. More than one method of data collection was reported for several studies.

Data analysis procedures were classified as quantitative and qualitative. Quantitative procedures were further categorized as descriptive statistics such as means, frequencies, and percentages; descriptive statistics and statistical tests such as *t* tests, analysis of variance or covariance, and chi square; and theory-building statistical procedures. Descriptive statistics alone were used in 102 (43%) of the 237 studies. Seventy-nine studies (33%) utilized descriptive procedures plus one or more statistical tests. Only 18 studies (8%) used statistical procedures such as regression, path analysis, and LISERL, to test or modify existing theories or propose new theories. For 30 studies (13%), data analysis consisted of qualitative narrative descriptions; 8 (3%) used both statistical and qualitative analysis.

The procedures used for data analysis varied among the four journals. For example, articles published in *JFCS* relied heavily on descriptive analysis. In contrast, articles published in *FCSRJ* incorporated more complex statistics including theory-building procedures. Qualitative data analysis was more prominent in *JFCSE* and *JFCS*.

Use of Theory

As noted, few of the studies utilized theory-building statistics. Likewise, only 20 studies grounded the research problem in a theoretical framework and/or used theory as a basis for interpreting research results. These included a third of the articles published in *FCSRJ* and about 20% of those published in *JVER*. Among the theoretical frameworks utilized were Brown's critical science curriculum perspective, Bennett's model of intercultural sensitivity, Holland's theory of vocational choice, Fuller's model of teacher development, Kolb's experiential learning theory, Bandura's theory of self efficacy,

TABLE 2: FCSE Theses and Dissertations Completed, 1985-1999

Year	No. of Theses	No. of Dissertations
1985	29	21
1986	37	18
1987	46	11
1988	40	25
1989	47	17
1990	38	15
1991	38	13
1992	29	10
1993	29	12
1994	25	11
1995	28	9
1996	19	6
1997	17	6
1998	19	6
1999	12	11
Total	453	191

SOURCE: Adapted from *Family and Consumer Sciences Research Journal* listings of theses and dissertations. It is unclear whether these listings include all FCSE theses and dissertations completed in programs administered by academic units other than family and consumer sciences (e.g., colleges or departments of education).

NOTE: FCSE = family and consumer sciences education.

Herzberg's motivation-hygiene theory, Chow and Berheide's theory of work-family interaction, and social learning theory, as well as theories of explanatory style, voluntary simplicity, women's occupational development, and professional socialization.

THESIS AND DISSERTATION RESEARCH

The annual *FCSRJ* listings of theses and dissertations were used to summarize research completed by FCSE graduate students (see Table 2). A total of 453 theses and 191 dissertations were reported for the period 1985-1999. The number of theses ranged from a high of 47 in 1989 to a low of 12 in 1999, and the number of dissertations ranged from 25 in 1988 to 6 annually from 1996 to 1998.

There was a distinct declining trend in the number of theses and dissertations completed during the 15-year period. The annual number of theses averaged 40 between 1985 and 1989, 32 between 1990

and 1994, and 19 between 1995 and 1999. The comparable numbers for dissertations were 18, 12, and 8, respectively.

Five institutions accounted for slightly more than half of the 453 theses completed during the 15 years. Ohio State University, with 78, was the leading producer of thesis research, followed by University of Wisconsin–Stout (52), Utah State University (44), Iowa State University (41), and University of Nebraska–Lincoln (13). Nearly three fourths (73%) of the 191 dissertations were completed at six institutions: Ohio State University (42), Iowa State University (42), Oklahoma State University (17), Texas Tech University (13), University of Minnesota (13), and University of North Carolina–Greensboro (13). (Note: Information on institutions granting the largest number of theses and dissertations is based on actual listings published in *FCSRJ*, except for 1993 when only summary data were reported.)

LOOKING TO THE FUTURE

The research included in this review was limited to four journals believed to account for a major portion of published research in FCSE. However, FCSE researchers do and should publish in a variety of other journals such as the *Journal of Career and Technical Education*, the *Journal of Nutrition Education*, and *Family Relations*. Venues such as the National Research Center for Career and Technical Education also serve as FCSE publication outlets. It should not be assumed that this review includes all of the published research in FCSE or that only those who publish in the four selected journals are conducting and publishing research.

The results of the review clearly reflect the impact of the 1983 launching of *JFCSE*, in that more than three fourths of the articles reviewed appeared in this journal. The implications of the recent decision to publish *JFCSE* exclusively online and provide open access are as yet unknown. In any case, FCSE researchers will reach a wider audience by continuing to publish in a variety of journals.

It is obvious that collaborative research, one of the strengths cited by Wallace and Hall in 1984, has continued to flourish. Collaboration is reflected in the large number of multiauthor articles, ranging from about 60% in *JFCS* to well over 90% in *FCSRJ*. Some articles were co-authored by FCSE colleagues including graduate students; other co-authors were researchers in related disciplines.

The total number of authors suggests significant research involvement on the part of FCSE professionals. However, the typical author published only one or two articles during the 15-year period, lending support to the criticism identified by Wallace and Hall (1984) that too few individuals are engaged in research on a continuing basis. In an analysis of recent articles published in *JFCSE*, Felstehausen and Couch (in press) cited declining authorship by FCSE researchers as a concern. This trend can be explained in part by a decrease in the number of family and consumer sciences teacher education programs, from 217 in 1994 to the current 168 (Kreutzer, 1999-2000; Weis, 1995).

Some progress has been made in addressing other shortcomings identified by Wallace and Hall (1984) and others. For example, some of our research efforts have focused on priority issues such as program effectiveness, work and family relationships, and teacher supply and demand in part because of the leadership of the ACTE Family and Consumer Sciences Research Committee.

Although the majority of researchers continue to use empirical modes of inquiry and rely heavily on survey methods, there appears to be an increased acceptance of alternative frameworks. The interpretative approach, including qualitative methodology, was particularly apparent in articles published in *JFCS* and *JFCSE*.

One of the ongoing concerns about FCSE research has been the perceived lack of theory, and indeed only 20 studies incorporated a theoretical framework, and even fewer utilized theory-building analysis procedures. There is some evidence, however, that researchers are beginning to strengthen the interaction between theory and research. For example, Felstehausen and Couch (in press) note that 37% of the articles published in volumes 13-16 of *JFCSE* utilized theory in some way, compared with only 19% in the previous six volumes. FCSE researchers could make further progress toward theory building by increasing the use of experimental methods and by using grounded theory approaches for qualitative studies.

The decline in the number of theses and dissertations has serious implications for the future of FCSE research. The relationship between graduate education and the preparation of future researchers cannot be overestimated. As Getman (1992) has noted, "it is at graduate school that future professors learn the basic structure of their disciplines; acquire models for scholarship, pedagogy, and intellectual style" (p. 7).

There is a critical need to renew efforts to recruit doctoral students and strengthen the research component of master's degree programs by emphasizing thesis options. The ability to prepare future researchers for the field is further challenged by the fact that, of the six institutions identified as leading producers of dissertation research, at least three no longer have viable FCSE doctoral programs.

A related concern is that graduate student research is largely unpublished, suggesting a need for increased efforts on the part of academic advisors to encourage graduate students to publish their research and assist them in doing so. Journal editors also might consider using the *FCSRJ* listings of theses and dissertations as a basis for solicitation of articles.

The future holds opportunities and challenges for FCSE researchers. There is a need to broaden our use of theory and extend our methodologies beyond the limits of surveys and descriptive statistics, even as we continue to address issues that are important to the profession. Some priority issues for future research have been identified previously, including the critical need for family and consumer sciences teachers. A related issue is the use of technology to deliver teacher certification courses through distance education. A new priority issue is the implementation and assessment of the recently published national standards for family and consumer sciences. The national focus on accountability in education is a related issue that offers the potential for continued collaboration with other educators.

Action research, an emerging trend in educational research, offers a further opportunity to expand the boundaries of our research efforts. The forthcoming 2001 edition of the AAFCS Teacher Education Yearbook, edited by Linda Peterat and Mary Gale Smith, promises to provide direction for using action research to increase participation in research activities and strengthen the interaction between researchers and practitioners.

James Stone, current editor of *JVER*, noted in a recent issue that the journal "ought to be the place where we address perennial issues and problems of vocational education" (Stone, 2000, p. 1). He asked readers to consider the question, "What are the interesting questions and perennial issues?" Family and consumer sciences educators need to ask similar questions. What issues do we need to be addressing? What interesting questions should we be answering? How can we best study these critical issues and questions and share the results within the profession and beyond? To ensure the advancement of research

and scholarship in our field, it is important for more of us to become actively involved in finding the answers to these questions.

REFERENCES

- AAFCS Senate passes teacher supply and demand resolution. (1996). *AAFCS Action*, 23(1), 7.
- Bailey, L. C. (1971). *Review and synthesis of research on consumer and homemaking education*. Columbus, OH: ERIC Clearinghouse on Vocational and Technical Education, Center for Vocational and Technical Education, Ohio State University.
- Chadderdon, H., & Fanslow, A. M. (1966). *Review and synthesis of research in home economics education*. Columbus, OH: Center for Research and Leadership Development in Vocational and Technical Education.
- Clawson, B. (1981). Research and development by home economics educators. In E. R. Ray (Ed.), *Sixty significant years*. Blomington, IL: McKnight.
- Clawson, B., & Morgan, M. (1988). A critical analysis of the Journal of Vocational Home Economics Education. *Journal of Vocational Home Economics Education*, 6(2), 73-80.
- Coomer, D. L. (1989). Introduction to critical inquiry. In F.H. Hultgren & D. L. Coomer (Eds.), *Alternative modes of inquiry in home economics research*, Yearbook 9, Teacher Education Section, American Home Economics Association. Peoria, IL: Glencoe.
- Couch, S., & Felstehausen, G. (1994). Analysis of the *Journal of Vocational Home Economics Education*, 1989-94. *Journal of Vocational Home Economics Education*, 12(2), 49-57.
- Felstehausen, G., & Couch, S. (in press). Analysis of the *Journal of Family and Consumer Sciences Education*, 1995-98. *Journal of Family and Consumer Sciences Education*.
- Gay, L. R., & Airasian, P. (2000). *Educational research: Competencies for analysis and application*. Upper Saddle River, NJ: Prentice Hall.
- Getman, J. (1992). *In the company of scholars: The struggle for the soul of higher education*. Austin: University of Texas Press.
- Hultgren, F. H. (1989). Introduction to interpretive inquiry. In F. H. Hultgren & D. L. Coomer (Eds.), *Alternative modes of inquiry in home economics research*, Yearbook 9, Teacher Education Section, American Home Economics Association. Peoria, IL: Glencoe.
- Hultgren, F. H., & Coomer, D. L. (Eds.). (1989). *Alternative modes of inquiry in home economics research*, Yearbook 9, Teacher Education Section, American Home Economics Association. Peoria, IL: Glencoe.
- Kreutzer, J. R. (Ed.). (1999-2000). *The national directory of the Family and Consumer Sciences Division of the Association for Career and Technical Education*. Peoria, IL: Glencoe/McGraw-Hill.
- Lehman, R. T. (1960). The next fifty years in home economics education research. *Journal of Home Economics*, 52(1), 23-26.
- McCullers, J.C. (1984). The role of theory in research: Implications for home economics. *Home Economics Research Journal*, 12(4), 523-538.
- Nelson, H. Y. (1979). *Home economics education: A review and synthesis of research*. Columbus, OH: ERIC Clearinghouse on Adult, Career and Vocational Education, Center for Research in Vocational Education, Ohio State University.

- Redick, S. (Ed.). (1996). *Review and synthesis of family and consumer sciences education research, 1985-1995*, Yearbook 16, Education and Technology Division, American Association of Family and Consumer Sciences. Peoria, IL: Glencoe/McGraw-Hill.
- Redick, S, Gritzmacher, J., Andrian, M., Dohner, R., Galloway, B., Laster, J., & Loyd, C. M. (1986). *Home economics education: A review and synthesis of research*. Columbus, OH: ERIC Clearinghouse on Adult, Career and Vocational Education, Center for Research in Vocational Education, Ohio State University.
- Stone, J. R., III (2000). Editor's notes. *Journal of Vocational Education Research*, 25(1), 1-3.
- Wallace, S. A., & Hall, H. C. (1984). Research in home economics education: Past achievements, present accomplishments, future needs. *Home Economics Research Journal*, 12, 403-419.
- Weis, S.F. (1995). *The national directory of the Family and Consumer Sciences Division of the American Vocational Association*. Peoria, IL: Glencoe/McGraw-Hill.
- Zimmerman, K. (1989). Introduction to empirical inquiry. In F. H. Hultgren & D. L. Coomer (Eds.), *Alternative modes of inquiry in home economics research*, Yearbook 9, Teacher Education Section, American Home Economics Association. Peoria, IL: Glencoe.

An Overview of the Theses and Dissertations Completed in Family and Consumer Sciences: 2000

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This article summarizes the 635 titles of theses and dissertations completed in family and consumer sciences in colleges and universities from all four regions of the United States in 2000. The tables represent the information by reporting institution and by subject matter.

Reporting Institutions

Forty colleges or universities representing 29 states reported thesis and dissertation titles in family and consumer sciences in 2000 (see Table 1). The reporting institutions represent the following geographic regions: southern, 17 (42%); central, 14 (35%); western, 6 (15%); and northeastern, 3 (3%) (American Association of Family and Consumer Sciences [AAFCS], 2001). According to the Carnegie Classification of Institutions of Higher Education, 26 (65%) of the reporting institutions are classified as Doctoral/Research University, Extensive; 9 (22.5%) as Doctoral/Research University, Intensive; and 5 (12.5%) as Master's—Colleges and Universities I (Carnegie Foundation for the Advancement of Teaching, 2000). Thirty-eight of the 40 reporting institutions have programs accredited by the American Association of Family and Consumer Sciences (AAFCS, 2001).

Contributing institutions in 2000 reported a grand total of 635 titles, of which 203 are dissertation titles and 432 are thesis titles. Of the total number of master's degrees reported, 90.9% ($n = 393$) are masters of science; 7.8% ($n = 34$), masters of arts; 0.92% ($n = 4$), masters of education; and 0.23% ($n = 1$), masters of home economics. The overall number of thesis and dissertation titles reported in 2000 decreased by 2.9% from the 654 titles reported in 1999 (see Table 5). Compared to 1999, the number of thesis titles reported remained fairly constant; however, the number of dissertation titles ($N = 221$) declined by 8.1%.

TABLE 1: Number of Theses and Dissertations Reported for 2000 by Institution

<i>Institution</i>	<i>Number</i>		
	<i>Theses</i>	<i>Dissertations</i>	<i>Total</i>
Alabama			
Tuskegee University	7	0	7
The University of Alabama	8	0	8
Arkansas			
University of Arkansas	9	0	9
California			
California State University–Long Beach	8	0	8
California State University–Northridge	6	0	6
Colorado			
Colorado State University	35	2	37
Florida			
Florida State University	6	19	25
Georgia			
The University of Georgia	20	7	27
Idaho			
University of Idaho	5	0	5
Illinois			
Illinois State University	8	0	8
Northern Illinois University	7	0	7
Indiana			
Ball State University	4	0	4
Indiana State University	2	0	2
Iowa			
Iowa State University	33	24	57
Kentucky			
University of Kentucky	11	0	11
Louisiana			
Louisiana Tech University	6	0	6
Michigan			
Michigan State University	12	10	22
Minnesota			
University of Minnesota	4	14	18
Mississippi			
University of Southern Mississippi	4	6	10
Missouri			
University of Missouri–Columbia	9	7	16
Nebraska			
University of Nebraska–Lincoln	14	3	17
New York			
Cornell University	31	31	62
Queens College, CUNY	9	0	9
North Carolina			
East Carolina University	6	0	6
University of North Carolina at Greensboro	18	5	23

TABLE 1 Continued

<i>Institution</i>	<i>Number</i>		
	<i>Theses</i>	<i>Dissertations</i>	<i>Total</i>
North Dakota			
North Dakota State University	5	0	5
Ohio			
Ohio State University	2	3	5
University of Akron	6	0	6
Oklahoma			
Oklahoma State University	33	5	38
Oregon			
Oregon State University	9	7	16
Rhode Island			
University of Rhode Island	2	0	2
South Dakota			
South Dakota State University	1	0	1
Tennessee			
East Tennessee State University	2	0	2
University of Memphis	8	0	8
University of Tennessee—Knoxville	16	22	38
Texas			
Stephen F. Austin State University	1	0	1
Texas Tech University	7	6	13
University of North Texas	4	0	4
Utah			
Utah State University	28	6	34
Virginia			
Virginia Polytechnic Institute and State University	26	26	52
Total	432	203	635

The institutions reporting more than 10 dissertation titles, more than 20 thesis titles, and more than 30 thesis and dissertation titles combined are ranked by number of titles in Table 2. The institution reporting the highest number of dissertation titles and the highest combined total of thesis and dissertation titles was Cornell University with ($n = 31$) and ($n = 62$), respectively. The institution reporting the highest number of thesis titles was Colorado State University ($n = 35$).

Subject Matter Categories

Tables 3, 4, and 5 summarize subject matter category information. Reporting institution representatives described the titles in terms of

TABLE 2: Ranking of Institutions Reporting Highest Number of Theses and Dissertations in 2000

<i>Institution</i>	<i>Number</i>	<i>Ranking</i>
Theses		
Colorado State University	35	1
Oklahoma State University	33	2
Iowa State University	33	2
Cornell University	31	3
Utah State University	28	4
Virginia Polytechnic Institute and State University	26	5
Dissertations		
Cornell University	31	1
Virginia Polytechnic Institute and State University	26	2
Iowa State University	24	3
University of Tennessee–Knoxville	22	4
Florida State University	19	5
University of Minnesota	14	6
Total		
Cornell University	62	1
Iowa State University	57	2
Virginia Polytechnic Institute and State University	52	3
Oklahoma State University	38	4
Colorado State University	37	5
Utah State University	34	6

subject matter categories (see Table 3). Of the 15 subject matter category subdivisions, the five subject areas with the most titles reported, continuing a 5-year trend, were family relations, 151 (23.7%); nutrition, 149 (23.4%); foods, 73 (11.6%); child development, 57 (8.9%); and clothing/apparel, 45 (7.0%) (see Tables 3 and 5).

Table 4 presents the highest number of thesis and dissertation titles by reporting institution and by subject matter category. The institutions reporting the highest number of titles per subject matter category were the following:

Art and design: Colorado State University; Cornell University
 Child development: Iowa State University, The University of Tennessee–Knoxville
 Clothing/ apparel: Iowa State University, University of North Carolina at Greensboro; Virginia Polytechnic Institute and State University
 Communications: Cornell University
 Family/consumer resource management: Iowa State University
 Family and consumer sciences/general: Utah State University
 Family relations: Virginia Polytechnic Institute and State University

TABLE 3: Numbers and Percentages of Theses and Dissertations in 2000 by Subject Matter Category

<i>Category</i>	<i>Theses</i>		<i>Dissertations</i>		<i>Total</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Art and design	25	3.9	3	0.47	28	4.4
Child development	41	6.4	16	2.5	57	8.9
Clothing/apparel	29	4.5	16	2.5	45	7.0
Communications	1	0.15	0	0	1	0.15
Family and consumer sciences– general	17	2.6	8	1.2	25	3.9
Family and consumer resource management	14	2.2	16	2.5	30	4.7
Family relations	86	13.5	65	10.2	151	23.7
Foods	67	10.5	6	0.9	73	11.4
Human environment/housing	3	0.47	4	0.62	7	1.1
Institution, hotel, and restaurant management	7	1.1	9	1.4	16	2.5
Interdisciplinary	1	0.15	0	0	1	0.15
International	1	0.15	3	0.47	4	0.62
Nutrition	115	18.1	34	5.35	149	23.4
Textiles	13	2.0	5	0.78	18	2.8
Miscellaneous	12	1.8	18	2.8	30	4.7
Total	432	68	203	32	635	

Foods: Colorado State University

Human environment/housing: Oregon State University, University of Missouri–Columbia

Institution, hotel, and restaurant management: Virginia Polytechnic Institute and State University

Interdisciplinary: Louisiana Tech University

International: Cornell University

Nutrition: Cornell University

Textiles: Cornell University

Miscellaneous: University of Tennessee–Knoxville

A compilation and overview of titles reported from 1996 to 2000 are presented in Table 5. In addition to the total number of titles reported, the table includes information on the number of reporting institutions, the percentages of theses and dissertations, distribution by type of degree, and distribution by subject matter (Kennemer & Ownbey, 1999, 2000; Ownbey, 1998; Ownbey & Taupman, 1997). As shown in Table 5, the leading subject matter categories for combined thesis and dissertation titles were family relations/child development,

TABLE 4: Ranking of Institutions Reporting Highest Numbers of Theses and Dissertations by Subject Matter Category

<i>Subject Matter</i>	<i>Institutions^a</i>
Art and design	Colorado State University (6,0); Cornell University (6,0); University of Minnesota (1,3)
Child development	Iowa State University (6,2); The University of Tennessee–Knoxville (3,5); University of Alabama (5,0)
Clothing/apparel	Iowa State University (1,4); University of North Carolina at Greensboro (5,0); Virginia Polytechnic Institute and State University (0,5)
Communications	Cornell University (1,0)
Family/consumer resource management	Iowa State University (3,2); University of Missouri-Columbia (2,2); University of Minnesota (0,4)
Family and consumer sciences/general	Utah State University (12,0); Cornell University (3,5)
Family relations	Virginia Polytechnic Institute and State University (10,9); Utah State University (11,5); Iowa State University (5,10)
Foods	Colorado State University (14,2); Iowa State University (12,3); University of Memphis (8,0)
Human environment/housing	Oregon State University (0,2); University of Missouri-Columbia (0,2)
Interdisciplinary	Louisiana Tech University (1,0)
International	Cornell University (1,2)
Institution, hotel, and restaurant management	Virginia Polytechnic Institute and State University (1,5); University of Southern Mississippi (0,4); University of North Texas (3,0)
Nutrition	Cornell University (8,16); University of Georgia (10,3); Oklahoma State University (12,2)
Textiles	Cornell University (5,2); University of Georgia (2,3)
Miscellaneous	University of Tennessee–Knoxville (7,8); Virginia Polytechnic Institute and State University (4,4); Florida State University (0,6)

a. First number in parentheses indicates total theses completed; second number indicates total dissertations completed.

TABLE 5: Numbers of Titles by Theses/Dissertations and Leading Subject Matter Categories, 1996-2000

Category	1996	1997	1998	1999	2000
Institutions reporting	43	44	44	41	40
Titles listed (total)	612	721	734	654	635
Theses ^a	413 (67)	476 (66)	482 (66)	433 (66)	432 (68)
Dissertations	199 (33)	245 (34)	253 (34)	221 (34)	203 (32)
Theses by subject matter category					
Family relations/ child development ^b	81/43	107/54	75/56	98/51	86/41
Nutrition/foods	91/66	105/60	92/76	91/65	115/67
Clothing/textiles	33/6	34/19	39/12	32/12	29/13
Dissertations by subject matter category					
Family relations/ child development	70/23	91/25	81/26	63/17	65/16
Nutrition/foods	26/18	32/12	30/27	29/32	34/6
Clothing/textiles	13/0	18/10	12/10	19/5	16/5
Total titles by subject matter category					
Family relations/ child development	151/66	198/79	156/82	161/68	151/57
Nutrition/foods	117/84	137/72	122/103	120/97	149/73
Clothing/textiles	46/6	52/29	51/22	51/22	45/18

a. Numbers in parentheses are percentages of total titles in a given year.

b. Numbers separated by a slash correspond to subject matter category similarly slashed. For example, in 1996, 81 theses focused on family relations, and 43 focused on child development.

nutrition/foods, and clothing/textiles. Congratulations to the graduate students and their advisors for completing these theses and dissertations.

REFERENCES

- American Association of Family and Consumer Sciences. (2001, July 24). *Accreditation Program* [online]. Available: <http://www.aafcs.org/education/accreditation.html>
- Carnegie Foundation for the Advancement of Teaching. (2001, July 24). *Carnegie Classification: The Carnegie Classification of Institutions of Higher Education, 2000 edition* [online]. Available: <http://www.carnegiefoundation.org/Search/SiteSearch.htm>
- Kennemer, C. G., & Ownbey, S. F. (1999). Theses and dissertations completed in family and consumer sciences: 1998. *Family and Consumer Sciences Research Journal*, 28, 238-244.
- Kennemer, C. G., & Ownbey, S. F. (2000). An overview of theses and dissertations completed in family and consumer sciences: 1999. *Family and Consumer Sciences Research Journal*, 29: 173-179.

- Ownbey, S. F. (1998). Theses and dissertations completed in family and consumer sciences: 1997. *Family and Consumer Sciences Research Journal*, 27, 214-221.
- Ownbey, S. F., & Taupman, A. (1997). Theses and dissertations completed in family and consumer sciences: 1996. *Family and Consumer Sciences Research Journal*, 26, 207-214.

A Listing of Theses and Dissertations Completed in Family and Consumer Sciences: 2000

Terra L. Smith
Angela R. Fullerton
University of Memphis

ART AND DESIGN

Doctorate

Interior Design

Chung, Yun M. *Users' perceptions of territoriality in residence hall rooms*. University of Minnesota, St. Paul, MN. (IL,M,E)

Homme, Denise Rane. *Chairs in the context of life experience: An exploratory study*. University of Minnesota, St. Paul, MN. (IL,M,E)

Widmer, Melba Rae. *Exploring the relationship among the Amish belief system, their way of life, and house form*. University of Minnesota, St. Paul, MN. (IL,M,E)

Master's

Aesthetics

Andes, Glenda Gilmore. *The effect of carpet fiber on the growth of Dermatophagoides farinae in a controlled environment*. Virginia Polytechnic Institute and State University, Blacksburg, VA.

Graham, Christina Kate. *Interpretive design as a theoretical guideline for exhibit designers*. Colorado State University, Fort Collins, CO. (IL)

Authors' Note: The codes appearing in parentheses at the end of each entry indicate the availability of the thesis or dissertation. D = department, E = electronic, IL = interlibrary loan, M = microfilm or microfiche, and NA = not available; no entry indicates institution reported no method for accessing the thesis/dissertation.

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Clothing Design

- Frisbie, Zoedel E. *Marketing strategies of home-based custom clothiers who were members of the Professional Association of Custom Clothiers, Oregon chapter*. Oregon State University, Corvallis, OR. (IL)
- Krenzer, Grace P. *Development of grading scale and bodice slopers for full-busted females*. Oklahoma State University, Stillwater, OK. (IL)

Furniture Design

- Muss, Timothy Michael. *Effects of a vertical split-keyboard on posture, comfort, and performance*. Cornell University, Ithaca, NY. (IL,M)
- Vogel, Elizabeth Marie. *Curriculum assessment: Furniture design and furniture construction in Fider accredited design programs*. Colorado State University, Fort Collins, CO. (IL)

Interior Design

- Allen, April Diane. *Complex spatial skills: The link between visualization and creativity*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (NA)
- Bilger, Amy. *Conceptual design proposal for Jenks public school central campus cafeteria facility*. Oklahoma State University, Stillwater, OK. (IL)
- Burns, Herbert I., Jr., *Evolution of a solution*. The University of North Carolina, Greensboro, NC. (IL)
- Cohen, Linda Marlene. *The business of space during mergers and acquisitions: An analysis of M & A market trends using facility strategy indicators and modeling the M & A facility strategy decision-making and implementation process*. Cornell University, Ithaca, NY. (IL,M)
- Deardorff, Carolyn Jean. *Universal design defined*. Colorado State University, Fort Collins, CO. (IL)
- Gibbs, Richard Wesley. *Designing meaning into the house*. University of Minnesota, St. Paul, MN. (IL)
- Jin, So Young. *Impact of the change to U. S. style open-plan layouts on Korean offices*. Cornell University, Ithaca, NY. (IL,M)
- Lin, Chia-Rung. *Interior designers' attitude, knowledge, and applications of lighting design*. Colorado State University, Fort Collins, CO. (IL)
- Montenegro, Diane Joyce. *Dan Cooper, American designer (1901-1965)*. University of Rhode Island, Kingston, RI. (IL)
- Nazneen, Sultana. *Attitudes and beliefs of design professionals regarding environmentally conscious design*. Texas Tech University, Lubbock, TX. (IL)
- Searing, Erin Elizabeth. *Perception of sense of place and sense of self through the design of the home*. Colorado State University, Fort Collins, CO. (IL)
- Sferi, Rahma. *The effect of the color scheme of a bank interior on subjects' evaluation of the bank and its employees*. Oregon State University, Corvallis, OR. (IL)
- Sindhuseka, Kultawat. *Utilization patterns of centralized and distributed conference rooms*. Cornell University, Ithaca, NY. (IL,M)

- Snethen, April Baumgartner. *Effects of full-spectrum lighting on the use of the classroom library center by preschool children*. Oklahoma State University, Stillwater, OK. (IL)
- Vithayathawornwong, Supaporn. *The role of the physical environment in promoting creativity in organizational settings*. Cornell University, Ithaca, NY. (IL,M)
- Volpe, Susan K. *Parallel journey: Learning styles and personality types of interior design students*. California State University, Northridge, CA.
- Yang, Li-Lin. *Interior designers' attitudes, knowledge, and applications of universal design*. Colorado State University, Fort Collins, CO. (IL)

Related Arts

- Killeen, Jennifer Platten. *The inclusion of permanent student artwork in public schools and its relation to sense of ownership*. Cornell University, Ithaca, NY. (IL,M)
- Kim, Ji-Hyun. *Developing an educational web site for youth regarding protection from ultraviolet radiation, and evaluating that web site via the Internet*. Michigan State University, East Lansing, MI. (M)

CHILD DEVELOPMENT

Doctorate

Child Growth, Care, and Development

- Brandon, Denise Judd. *Maternal age at transition to parenthood: Prediction of children's perceptions of well-being*. The University of Tennessee, Knoxville, TN. (IL)
- Dean, Eliza Labouisse. *When they start doing things like that, they are ready to go: What the infant's transition from the infant classroom to the toddler classroom means to teachers*. The University of Tennessee, Knoxville, TN. (IL)
- Devereaux, Matthew J. *The relationship and communication experiences of student-teachers and their supervisors: A qualitative study*. The University of Tennessee, Knoxville, TN. (IL)
- Diehl, David C. *Emergent literacy and parent-child reading in Head Start families: The implementation and evaluation of a multigenerational reading program*. Cornell University, Ithaca, NY. (IL,M)
- Frabutt, James M. *Parenting practices, mother-child relationship style, and early adolescents' psychosocial competence in African American families*. The University of North Carolina, Greensboro, NC. (M)
- Green, Katherine Elizabeth. *Attachment parenting: New ideas, old practices*. The University of Tennessee, Knoxville, TN. (IL)
- Rowe, Elizabeth Marie. *The transition to algebra: The crossroads in math self-concept development*. Cornell University, Ithaca, NY. (IL,M)
- Saxby, Erica Denise. *Understanding adolescent community service involvement*. Florida State University, Tallahassee, FL. (IL)

Smith, Catherine R. *Physiologic responses of preterm infants in the neonatal intensive care unit: Moderating effects of skin-to-skin care*. The University of Tennessee, Knoxville, TN. (IL)

Thackeray, Amanda Morgan. *Children's relational perceptions of God*. Florida State University, Tallahassee, FL. (IL)

Child Health Care

Anderson, Susan D. *A preliminary study of family coping behaviors and the timing of diagnosis of spina bifida*. Florida State University, Tallahassee, FL. (IL)

Early Childhood Education

Baum, Angela. *Exploring the beliefs of early childhood preservice teachers*. Iowa State University, Ames, IA. (IL)

Bewick, Cynthia J. *The adoption of computers as an instructional tool by Michigan Head Start teachers*. Michigan State University, East Lansing, MI. (M)

Contreras, Dawn A. *The influence of a paraprofessional, home visitation parent education program on the social support and parenting behaviors of limited resource families*. Michigan State University, East Lansing, MI. (M)

Gregory, Kara T. *The influence of the Scaffolded Writing Technique on the literacy development of kindergarten children*. Michigan State University, East Lansing, MI. (M)

Mallory, Heidi. *The battleground in kindergarten: A contrast between pretend aggression and real aggression in a full-day kindergarten classroom*. Iowa State University, Ames, IA. (IL)

Master's

Child Development

Enriquez, Calixto G. *Parental satisfaction and social supports of single custodial mothers and single custodial fathers*. California State University, Long Beach, CA. (M)

Child, Growth, Care, and Development

Austin, Dusti Shawn. *The relationship among maternal parenting practices, maternal depression, and children's language and cognitive performance from Head Start through kindergarten*. Oklahoma State University, Stillwater, OK. (IL)

Battin, David B. *Reliability in young children's verbal description of events: Referential pitfalls for forensic interviewers*. Cornell University, Ithaca, NY. (IL,M)

Bell, Heidi Amelia. *Just because you see their privates doesn't mean you're not a virgin: Adolescent's understanding of sexual terminology*. Iowa State University, Ames, IA. (IL)

Brosi, Matthew W. *Psychosocial development among home-schooled and public-schooled adolescents in Arkansas*. University of Arkansas, Fayetteville, AR. (IL)

- Coleman, Kathryn B. *The influence of family dynamics, adolescent sexual risks, and depression in late adolescence*. University of Arkansas, Fayetteville, AR. (IL)
- Davis, Thompson Elder, III. *Cognition and bias in children: A socio-cognitive developmental model*. East Carolina University, Greenville, NC. (IL)
- Dayton, Brett David. *Relations between coping strategies, parenting stress, and difficult infant temperament among young, low-income primiparous mothers*. University of Missouri, Columbia, MO. (IL)
- Dutchak, Christina Rose. *The introduction of music as an environmental factor in children's behaviors at mealtime in group settings*. University of Idaho, Moscow, ID. (IL)
- Francois, Jennifer R. *The relationship between parental behavior and children's gender identity development*. University of Arkansas, Fayetteville, AR. (IL)
- Goin, Robin Page. *Parental accounts of home-based literacy processes: Contexts for children with special needs*. The University of Tennessee, Knoxville, TN (IL)
- Hannah, Laurie Elizabeth. *Evaluation of the Children Cope with Divorce program: A parent education program for divorcing parents*. The University of Alabama, Tuscaloosa, AL.
- Hill, Jenny I. *Correlates of aggression in preschool children*. University of Nebraska, Lincoln, NE. (IL)
- Holtzman, Suzette M. *Teaching conflict resolution in school: A conflict education curriculum for adolescents*. California State University, Northridge, CA.
- Jones-Branch, Julie A. *Characteristics of child care settings in Lancaster County*. University of Nebraska, Lincoln, NE. (IL)
- Kendra, Melanie A. *An exploration of musical intelligence*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Lawler, Bonnie Anne. *Stress, social and academic self-perception, and self-esteem in gifted and non-gifted children and disabilities into general education classrooms*. Iowa State University, Ames, IA. (IL)
- Matta, Mary Ann. *Associations between parent social network characteristics and children's academic competence: The moderating role of family structure*. The University of North Carolina, Greensboro, NC. (M)
- Morbitzer, Pamela K. *Employer-sponsored child care: A study of terminology, concepts, and metaphors*. Illinois State University, Normal, IL. (IL)
- Palmadottir, Elisabet Helga. *Icelandic parents' experiences with attitude toward, and use of corporal punishment*. The University of Alabama, Tuscaloosa, AL.
- Perry, Mary Liegh. *Quality child care in North Carolina: An analysis by geographical regions*. East Carolina University, Greenville, NC. (IL)
- Peterson, Susie L. *A comparison of parents' and teachers' perceptions of quality attributes of a preschool teacher*. South Dakota State University, Brookings, SD. (IL)
- Seo, Sojung. *Parents' selection of child care type - An ecological perspective*. Michigan State University, East Lansing, MI. (M)
- Staron, Elizabeth Kathleen. *Free time activities of gifted adolescents at a residential high school*. The University of Tennessee, Knoxville, TN. (IL)
- Sweet, Eun-Kyung. *The relationship of selected ecological factors to biracial adolescents' ethnic identity, and self-esteem*. The University of Tennessee, Knoxville, TN. (IL)
- Wathen, Laura Lynn. *Examining conflict resolution and development in preschoolers with disabilities*. University of Kentucky, Lexington, KY. (IL)
- Williams, Sarah Black. *Characteristics of the social environment and the expression of mastery-related behaviors*. East Carolina University, Greenville, NC. (IL)

Yong, Pui-Khin. *The role of toddlers' language and mothers' beliefs about play: Play interactions of Chinese mothers and their toddlers*. Iowa State University, Ames, IA. (IL)

Child Health Care

Bryant, Heather Ann. *Perceived social support in adolescents with cancer*. The University of Alabama, Tuscaloosa, AL.

Crocker, Elizabeth Gael. *Parental perception of anesthesia induction of their child*. The University of Alabama, Tuscaloosa, AL.

Early Child Education

Liu, Wenli. *Parental knowledge, attitudes, and practices about sex education for children in the People's Republic of China*. University of Nebraska, Lincoln, NE. (IL)

Berkey, Mona Diane. *Preschool teachers' strategies of socializing children's emotion regulation*. Iowa State University, Ames, IA. (IL)

Chakerian, Lucy. *Math and science preschool activities based on Armenian folk tales*. California State University, Northridge, CA.

Hickman, Traci Lynn. *Parent-child interactions in two different story book context*. Oklahoma State University, Stillwater, OK. (IL)

Jeon, Hyun-Joo. *Preserve teachers' attitudes and beliefs towards persons with disabilities and inclusion of children with disabilities into general education classrooms*. Iowa State University, Ames, IA. (IL)

Lutzer, Augustina Christina. *Burnout in child care administrators*. University of Kentucky, Lexington, KY. (IL)

Naig, Lisa Ann. *A focus on the collaboration efforts between Early Head Start (EHS) and other programs providing Part C services*. Iowa State University, Ames, IA. (IL)

Pruit, Rebeca. *Parent involvement in childcare, and an examination and comparison of current practices in childcare centers and family childcare homes*. Oklahoma State University, Stillwater, OK. (IL)

Travis, JoAnn Altenberndt. *A state-wide, longitudinal study covering two cohorts for school years 1993-1994 and 1995-1996: Examination of the influences of family background and early childhood program quality on children's early literacy skills*. University of Kentucky, Lexington, KY. (IL)

Turner, Angela Renea. *The role of teacher behaviors in the child care setting on social behaviors on toddlers*. The University of North Carolina, Greensboro, NC. (M)

Human Development and Family Studies

Magette, Merianne Downing. *Perceived parental involvement and young adults sexual behaviors*. The University of Alabama, Tuscaloosa, AL.

CLOTHING/APPAREL**Doctorate***Apparel Analysis*

Moye, Letecia Nicole. *Influence of shopping orientations, selected environmental dimensions with apparel shopping scenarios, and attitude on store patronage for female consumers*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (NA)

Apparel Production

Jackson, Renee Susan. *Comparison of color and fabric presentation options in the design process*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (NA)

Lee, Yuri. *Study of relationships between apparel manufacturers' supply chain management, company characteristics, and inventory performance*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (NA)

Schofield, Nancy Ackerman. *Investigation of the pattern grading assumptions used in the sizing of U. S. women's clothing for the upper torso*. University of Minnesota, St. Paul, MN. (IL,M,E)

Consumer Behavior

Lee, Eun-Ju. *Consumer adoption and diffusion of technological innovations: A case of electronic banking technologies*. The University of Tennessee, Knoxville, TN. (IL)

Lee, Jaecil. *Symbolic meanings, consumers' responses, and interpretations of postmodern fashion advertisements*. The Ohio State University, Columbus, OH. (IL)

Lee, Kyu-Hye. *Antecedents and consequences of apparel involvement: A multi-attribute model*. Iowa State University, Ames, IA. (IL)

Yu, Hong. *Tourists' shopping behavior*. Iowa State University, Ames, IA. (IL)

Retail

Frazier, Barbara J. *The influence of network characteristics on information access, marketing competence, and perceptions of performance in small rural businesses*. Michigan State University, East Lansing, MI. (M)

Retail/Merchandising

Callen, Karen S. *Linkages among university students' demographic traits, perceptions of unethical consumer behavior, and philosophies of human nature*. Oklahoma State University, Stillwater, OK. (IL)

- Endo, Seiji. *Long-term relationship between footwear manufacturer and consumers: Relationship spiral model of encounter for services and goods through Internet shopping*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (NA)
- Farr, Brecca Rhea. *Museum stores: Curators and marketers of culture*. Iowa State University, Ames, IA. (IL)
- Subramaniam, Anita Mandlam. *Utilitarian and value-expressive appeals in television shopping segments*. The Ohio State University, Columbus, OH. (IL)

Social/Psychological/Cultural Aspects

- Plassman, Vandana Shah. *Ethnicity and clothing expenditures of U. S. households: A structural equations model with latent quality variables*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Cheng Ching-Yi. *Acculturation and cultural value orientations of immigrant Chinese Americans: Effects on body image, aesthetics for appearance, and involvement in dress*. Iowa State University, Ames, IA. (IL)
- Johnson, Joyce E. Starr. *Motivational factors of contemporary needlework producers*. University of Missouri, Columbia, MO. (IL)

Master's

Apparel Analysis

- Botkin, Mary Madeline. *The New York look in America: A material culture analysis*. University of Minnesota, St. Paul, MN. (IL)
- Cocciolone, Linda Ann. *Fit preferences of professional women*. The University of North Carolina, Greensboro, NC. (IL)
- Cummins, Karen Michelle. *What she wore: An analysis of Belle Brezing's garments from 1882-1909*. University of Kentucky, Lexington, KY. (IL)
- Prelipp, Charity M. *The effects of vanity sizing on consumer satisfaction with fit and body-cathexis*. The University of North Carolina, Greensboro, NC. (IL)
- Ramsey, Ann Garrison. *Mass customization of clergy stoles using design process, consumer preferences, and applied technology*. The University of North Carolina, Greensboro, NC. (IL)
- Yu, Rongmin. *Needs assessment for functional clothing design in apparel design curricula in a selected college department in China*. Florida State University, Tallahassee, FL. (IL)
- Kissell, Kevin James. *Japanese aesthetics: Wabi-sabi used as design inspiration for contemporary women's evening wear*. Colorado State University, Fort Collins, CO. (IL)

Apparel Production

- Ahrens, Sean Frederick. *Optimization of fit for mass customized apparel ordering using fit preference and self-measurement*. Cornell University, Ithaca, NY. (IL,M)
- Cameron, Denise Shaffer. *Satisfaction of fit: Women law enforcement officers' uniforms*. Colorado State University, Fort Collins, CO. (IL)

Consumer Behavior

- Kenson, Kim. *A profile of apparel shopping orientation segments among male consumers*. California State University, Long Beach, CA. (M)
- Lazar, Sorina. *Where do people shop? An investigation of consumer preferences of shopping locations in Athens, Georgia*. The University of Georgia, Athens, GA. (IL,E)
- Chen, Yi-Ching. *Consumer response to sensuality in advertisements*. Colorado State University, Fort Collins, CO. (IL)
- Dancausse, Michael L. *Innovators of consumer direct Internet electronic commerce of apparel products*. The University of North Carolina, Greensboro, NC. (IL)
- Hakdiyen, Gulru. *The effect of the Euro on U. S. textile producers' strategic planning for exporting to the European Monetary Union*. The University of North Carolina, Greensboro, NC. (IL)
- Li, Jing. *Tourists' perceptions of their textile purchases: Aesthetic, utilitarian, symbolic, and price values*. Utah State University, Logan, UT. (M,E)

Historic Costume

- Gude, Michelle. *An African American quilt of Georgia: Analysis and meaning*. The University of Georgia, Athens, GA. (IL,E)
- Berry, Shannon Marie. *Missouri hats and the women who made and wore them: An interpretive look at millinery in Missouri Costume Collections 1890-1920*. University of Missouri, Columbia, MO. (IL)
- Kondo, Alison. *Identification of Asian garments in small museums*. Oregon State University, Corvallis, OR. (IL)
- Park, Juyeon. *Clothing acculturation history of Korean immigrants 1903-1950*. Iowa State University, Ames, IA. (IL)
- Stevens, Sarah C. *Costume-related artifacts from the Millpond site, Boston, Massachusetts*. University of Rhode Island, Kingston, RI. (IL)

Retail

- Jang, Sun-Hye. *The relationship among retail salespersons' perception of fair interpersonal treatment, organizational commitment, and employee deviance*. Oklahoma State University, Stillwater, OK. (IL)
- Sangratwatchara, Siriporn. *Apparel online shopping: Perceived risk and risk relievers*. The University of Tennessee, Knoxville, TN. (IL)

Retail/Merchandising

- Bigger, Cara C. *The effects of fluorescent, halogen, and xenon weather-ometer lighting conditions on 100% cotton dyed fabric*. Oklahoma State University, Stillwater, OK. (IL)
- Kumar, Shefali. *Consumers' behavioral intentions toward Internet shopping*. University of North Texas, Denton, TX. (IL,M,E)
- Winbush-Collum, Patricia. *Analysis of selected women's clothing retailers of the Internet and their customer service policies*. California State University, Northridge, CA.

Xuan, Jun. *Communication factors that affect Chinese apparel manufactures' export performance to the United States*. Oklahoma State University, Stillwater, OK. (IL)

Social/Psychological/Cultural Aspects

Cowie, Lora. *Relationship between male cyclists' sport clothing involvement, sport clothing interests, and commitment to cycling*. The Ohio State University, Columbus, OH. (IL)

Reilly, Andrew H. *Perceived clothing styles of gay and straight college males*. Florida State University, Tallahassee, FL. (IL)

Skibinsky, Eleonora. *Student's perceptions of school uniforms*. California State University, Northridge, CA.

COMMUNICATIONS

Master's

Kasper, Christian. *Communication and collaboration patterns on a university campus*. Cornell University, Ithaca, NY. (IL,M)

FAMILY AND CONSUMER SCIENCES, GENERAL

Doctorate

Driebe, Nicole Maria. *The devolution challenge: A case study of AmeriCorps*. Cornell University, Ithaca, NY. (IL,M)

Gans, Jonathan. *Facilitating synthesis and advancing methodological development in strategic planning*. Cornell University, Ithaca, NY. (IL,M)

Shin, Yoon-Jeong. *Two essays on youth health: Youth smoking and school outcomes of youths with disabilities*. Cornell University, Ithaca, NY. (IL,M)

Wheeler, Abigail Kathleen. *Are chain loyal consumers more likely to purchase private labels?: An investigation of the umbrella branding theory in the supermarket*. Cornell University, Ithaca, NY. (IL,M)

Family and Consumer Science Education

Good, Mary Ann. *Secondary school family and consumer sciences teachers' perceived importance of family and consumer sciences*. Iowa State University, Ames, IA. (IL)

Jiang, Weizhong. *Evaluation of brand extension and examination of price discrimination based on repeated buying: A case of lodging industry*. Cornell University, Ithaca, NY. (IL,M)

Williams, Bob. *Family and consumer sciences teachers' attitudes toward and stages of adoption of information technology*. Texas Tech University, Lubbock, TX. (IL)

Zeegers, Sarah K. *A content analysis of the journal of home economics, 1909-1994: A legacy of concerns for children*. Florida State University, Tallahassee, FL. (IL)

Master's

LaPolt, Elizabeth K. *An exploration of interorganizational collaboration: The Cornell University Breast Cancer and Environmental Risk Factors ad hoc discussion group*. Cornell University, Ithaca, NY. (IL,M)

Lowe, Staci Taylor. *Urban adolescents and welfare reform: Seeing the lightning but not hearing the thunder*. Cornell University, Ithaca, NY. (IL,M)

Family and Consumer Science Education

Barrus, Roger Wood. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

Barton, Barbie-De Baxter. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

Bullock, Karen H. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

Chang, Bruce C. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

Darmawan, Grace. *A comparison of attitude technology in the online classroom and the traditional classroom among dietetics and hospitality management and tourism students*. University of Kentucky, Lexington, KY. (IL)

Goodrich, Thane R. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

Hicks, Camille Ware. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

McElwain, Denise Louise. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

Miller, Treby Anita Snow. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

Mortensen, Clint B. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

Robb, John Ryan. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

Sabia, Joseph John. *No place like home: The effects of family composition changes, economic conditions, and declining functionality on aging-in-place of older homeowners*. Cornell University, Ithaca, NY. (IL,M)

Solomon, Heather Hansine. *Evaluation of the effectiveness of academic advisors in the College of Family Life at Utah State University*. Utah State University, Logan, UT. (M,E)

Tapper, Lisa. *ICN Handbook for Family and Consumer Sciences Teachers*. Iowa State University, Ames, IA. (IL)

Winter, Carol T. *Human Environments: Plan C*. Utah State University, Logan, UT. (M,E)

FAMILY RELATIONS

Doctorate

Family and Community Service

- Crane, Betsy. *Building a theory of change and a logic model for an empowerment-based family support training and credentialing program*. Cornell University, Ithaca, NY. (IL,M)
- Maisano, Paula Carole. *Perceptions of pregnant adolescents in structured and non-structured programs regarding individual and family factors*. Oklahoma State University, Stillwater, OK. (IL)
- Rymarchyk, Gretchen Kathleen. *Solution-focused interventions in child protective investigation: A promising alternative for working with families*. Cornell University, Ithaca, NY. (IL,M)

Family Counseling/Therapy

- Anderson-Pankow, Shannon. *Career practices and training perspectives of MFT program graduates*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Berg, Amy Michelle. *Qualitative evaluation of the passionate marriage couple enrichment weekend*. University of Minnesota, St. Paul, MN. (IL,M,E)
- Brandt-DeMoss, Sara L. *Understanding the experience of families involved in family-based treatment programs*. Iowa State University, Ames, IA. (IL)
- Carlson, Thomas Dale. *Fatherhood and deconstructive knowledge: Alternative ethical and methodological considerations for men interviewing men*. Iowa State University, Ames, IA. (IL)
- Esau, Amy Lash. *Family context of birth mother identity and intimacy development*. University of Minnesota, St. Paul, MN. (IL,M,E)
- Falter, Jeannine Marie. *The company as family: Perceived strengths of Duncan Aviation*. University of Nebraska, Lincoln, NE. (IL)
- Gatz, Anne. *The reliability and validity of the Parent Attachment Scale: A measure of adolescent perceptions of parental attachment behaviors*. Florida State University, Tallahassee, FL. (IL)
- Habben, Christopher M. *Differentiation as a predictor of extramarital involvement*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Halstead, Jackie Lynn. *Ministers' perception of support from their congregation: A qualitative study*. Iowa State University, Ames, IA. (IL)
- Jernigan, Clifford. *Psychosocial factors in marital and family relationships associated with physical illness: A case of collaborative health care*. Iowa State University, Ames, IA. (IL)
- Lamar, Julie Raffa. *Determining the standard of care: A comparison of a behavior point system and a values-based developmental curriculum in a community shelter for youth*. Florida State University, Tallahassee, FL. (IL)
- Lenkey, Laura E. *The impact of family concept coursework on second-year graduate speech-language pathologists' attitudes about both the importance of family-centered interventions and their training programs performance in that area*. Florida State University, Tallahassee, FL. (IL)

- Lim, Ben Kock Hong. *Conflict resolution styles, somatization, and marital satisfaction in Chinese and Caucasian couples: The moderating effect of forgiveness, and willingness to seek professional help*. Texas Tech University, Lubbock, TX. (IL)
- Marotta, Antonio. *The effects of post-divorce family therapy on children*. Texas Tech University, Lubbock, TX. (IL)
- Masini, Milagros Teresa. *Supervisory needs of in-home therapists as compared with therapists of clinical settings*. Iowa State University, Ames, IA. (IL)
- McGee, Michael. *Trauma and the elderly: Family response patterns and their impact*. Florida State University, Tallahassee, FL. (IL)
- Millikin, John W. *Resolving attachment injuries in couples using emotionally focused therapy: A process study*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Mohr, Laura Ann. *Relationship components needed for marriage and family therapists to work collaboratively with health care professionals: A national Delphi study*. Michigan State University, East Lansing, MI. (M)
- Rogers, Linda Peterson. *Women recreating their lives: Challenges and resilience in midlife*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Salston, Marydale G. *Secondary traumatic stress: A study exploring empathy and the exposure to the traumatic material of survivors of community violence*. Florida State University, Tallahassee, FL. (IL)
- Trudeau, Linda. *Effects of a clinical feedback systems on client and therapist outcomes in a rural community mental health center*. Iowa State University, Ames, IA. (IL)
- Whelihan, Wendy S. *Changes in couples' perceptions of intimacy and sexuality and meanings of sex: Evaluation of a couple enrichment program*. University of Minnesota, St. Paul, MN. (IL,M,E)

Gerontological Services

- Dawson, Donna Kay. *Determinants of nonrecovery following hip fracture in older adults: A chronic disease trajectory analysis*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Individual and Family Development

- Agee, Annabel Lee. *Family caregiving experiences with Alzheimer's disease: A collective case study*. The University of Tennessee, Knoxville, TN. (IL)
- Anderson, James R. *An exploratory study of the relations between selected children's perceptions of maternal acceptance and their reading achievement*. Michigan State University, East Lansing, MI. (M)
- Few, April Lynn. *An exploration of the experiences of heterosexual Black college women who leave psychologically abusive dating relationships*. The University of Georgia, Athens, GA. (IL,E)
- Bakken, Rosalie Jane. *Parental family characteristics and behavioral risk factors for sexually transmitted diseases in males*. Iowa State University, Ames, IA. (IL)
- Ballard, Sharon Marie. *Family life education for middle and older adults*. University of Tennessee, Knoxville, TN. (IL)
- Brotherson, Sean. *Parental accounts of a child's death: Influences on parental identity*. Oregon State University, Corvallis, OR. (IL)

- Case, Jenene L. *Coping strategies, family membership loss, and ego identity status among late adolescent females*. Florida State University, Tallahassee, FL. (IL)
- Caselman, Tonia Denise. *The imposter phenomenon among American and Japanese adolescents: Gender, self-perception, self-concept, and social support variables*. Oklahoma State University, Stillwater, OK. (IL)
- Cheek, Cheryl Lynn. *Promoting life management skills to enhance employment among women receiving services from the Department of Workforce Services*. Utah State University, Logan, UT. (M,E)
- Coehlo, Deborah. *Residential placement of patients with dementia: Relationship to care recipient and caregiver variables*. Oregon State University, Corvallis, OR. (IL)
- Coyl, Diana D. *Peer groups and adolescent development in traditional and alternative high schools*. Utah State University, Logan, UT. (M,E)
- Doucet, Fabienne. *The transition to school in middle class and working class African American families: A study of beliefs, values, and practices*. University of North Carolina, Greensboro, NC. (M)
- Foy, Martha E. *Family systems variables as predictors of eating styles and body mass index*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Futris, Theodore G. *The educational trajectories of adolescent males who become fathers compared to those who delay fatherhood*. University of North Carolina, Greensboro, NC. (M)
- Galbraith, Kevin A. *Family leadership: Constructing and testing a theoretical model of family well-being*. Utah State University, Logan, UT. (M,E)
- Gates, Raksha Dave. *The meaning of immigration for first and second generation Asian Indian immigrants: Generation, intergeneration, and gender*. University of Minnesota, St. Paul, MN. (IL,M,E)
- Gerard, Jean M. *Cumulative risk and youth problem behaviors: The role of IQ, cognitive problem-solving ability, and self-esteem*. University of Tennessee, Knoxville, TN (IL)
- Graham, Caroly Woody. *Role identity and role conflict among dual-career employed, non-career employed, and stay-at-home wives*. Texas Tech University, Lubbock, TX. (IL)
- Green, Stephen D. *Is the future better than the past?: An empirical comparison of marital quality among short-term, intermediate-term, and long-term couples*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Gross, Kevin Harvey. *Adolescent sexual competence and sexual risk-taking: An ecological model of risk and protection*. University of Tennessee, Knoxville, TN. (IL)
- Hechtner, Tamara Sue. *Maternal depression symptomatology, stress, and behavioral outcomes in children: A one-year longitudinal study*. Iowa State University, Ames, IA. (IL)
- Henderson, Tammy. *A content analysis of court opinions about grandparents visitation rights*. Oregon State University, Corvallis, OR. (IL)
- Hovey, Judith. *The needs of fathers parenting children with chronic conditions*. Michigan State University, East Lansing, MI. (M)
- Jones, Barbara J. *The relationship between prenatally drug exposed school-aged children's family and school microsystems*. Michigan State University, East Lansing, MI. (M)
- Karis, Terri Ann. *Racial identity constructions of White women in heterosexual Black-White interracial relationships*. University of Minnesota, St. Paul, MN. (IL,M,E)
- Kerns, Michael-David Alphonsus Rodriquez Richardson. *Post-solidarity and postmodern intergenerational relation(ship)s*. Iowa State University, Ames, IA. (IL)
- Klooserhouse, Vicki H. *Families' use of religion/spirituality as a psychosocial resource*. Michigan State University, East Lansing, MI. (M)

- Koehne, Kris. *The relationship between relational commitment, spousal intimacy, and religiosity and marital satisfaction*. University of Tennessee, Knoxville, TN. (IL)
- Olgetree, Mark Dryden. *Fathers and sons: An examination of distancing patterns during adolescence*. Utah State University, Logan, UT. (M,E)
- Parker, Jennifer S. *Parent structure and support and adolescent problems: Delinquency, substance abuse, and peer and self-esteem deficits*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Popillion, Amy Michelle. *Mothering into the new millennium: How mothering affects women's lives*. Iowa State University, Ames, IA. (IL)
- Rodriquez, Ariel. *Fathers, mothers, marriages, and children: Toward a contextual model of positive paternal influence*. Utah State University, Logan, UT. (M,E)
- Stewart, Ciloue Cheng. *Chinese American families from Taiwan: A transnational study of filial connection*. University of Minnesota, St. Paul, MN. (IL,M,E)
- Stone, Melody Gaye. *Spillover effects of interparental conflict styles: Parenting behaviors as linking mechanisms*. University of Tennessee, Knoxville, TN (IL)
- Vogel, Peggy MacLeod. *Biculturalism and identity in contemporary Gullah families*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Warren, Eunice N-M. *African American grandparent-grandchild interaction: An ethnographic study*. Florida State University, Tallahassee, FL. (IL)
- Weaver, Shannon E. *Mothering but not a mother role: A grounded theory study of the nonresidential stepmother role*. University of Missouri, Columbia, MO. (IL)
- West, Steven Lee. *Anglo and Hispanic college student performance and intent to graduate: A prospective examination of risk factors in two theoretical models*. Texas Tech University, Lubbock, TX. (IL)
- Williams, Olivia Ann. *An examination of the influence of community assets have in positive development of African American adolescent females from Michigan*. Michigan State University, East Lansing, MI. (M)

Master's

Family and Community Service

- Ainsworth, Amy Lee. *The effects of gender and political party on policy-making processes*. Iowa State University, Ames, IA. (IL)
- Ammerman, Chip F. *Comparing truant and delinquent adolescents in temperament, parenting style, and commitment to school*. North Dakota State University, Fargo, ND
- Brookes, Sheila Joyce. *The impact of welfare: Recipients' response to forced change*. University of Missouri, Columbia, MO. (IL)
- Chaparro, Evett M. Cortes. *The experiences of learning community students and their coordinators with intercultural training programs*. Iowa State University, Ames, IA. (IL)
- Cutshall, Carrie Lynn. *Parenting behaviors as a moderator of stress and family life satisfaction in ministers' adolescent children*. Oklahoma State University, Stillwater, OK. (IL)
- Johnson, Lorene. *Identifying volunteer motivation characteristics in three types of volunteer organizations*. University of Akron, Akron, OH. (IL)
- Rasmussen-Larson, Cheri Lynn. *Aspects of psychological well-being as mediators between extracurricular activities and drug and alcohol use*. North Dakota State University, Fargo, ND.

Travis, Wendi Prater. *Adolescent stress in single parent and agricultural households*. Louisiana Tech University, Ruston, LA. (IL)

Family Counseling/Therapy

Austin, Alexis R. *Making sexual decisions: Understanding adolescents' choices*. University of Nebraska, Lincoln, NE. (IL)

Bell, Frances L. *The presence of emotional cut-off in the lives of women who abuse substances*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Coleman, Michelle H. *A chance for change: The role of trust in foster care*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Collier, Amy Kathleen. *The effects of mandated premarital counseling on dyadic adjustments*. Colorado State University, Fort Collins, CO. (IL)

Dyrud, Alva. *Prospects on home-based family therapy as seen through the eyes of the therapist*. North Dakota State University, Fargo, ND.

Foward, Nicole Deanne. *Discontinuities and motivations for change in the intergenerational transmission of parenting*. Colorado State University, Fort Collins, CO. (IL)

Franklin, Rebecca. *Couple communication and relationship satisfaction in couples: An empirically based treatment group*. Oklahoma State University, Stillwater, OK. (IL)

Griffin, Melissa K. *The relationship of conflict to the negotiation of emotional closeness and distance in marriage*. Oklahoma State University, Stillwater, OK. (IL)

Harker, Emil Frank. *Clinical homework directives: A quantitative exploratory study*. Utah State University, Logan, UT. (M,E)

Haukenberry, Sacha. *The perceptions of potential consumers and providers of a collaborative approach to mental health services*. Oklahoma State University, Stillwater, OK (IL)

Hunt-Amos, Stacy L. *Husband's perspectives of his wife's past childhood sexual abuse*. University of Nebraska, Lincoln, NE. (IL)

Lawless, John. *Exploring the discourse of race, ethnicity, and culture in clinical supervision of marriage and family therapy utilizing conversation analysis*. University of Georgia, Athens, GA. (IL,E)

Linville, Deanna C. *The analysis of extracurricular activities and parental monitoring and their relationship to youth violence*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Long, Elise W. *Predictors of treatment completion for adolescent males in a mental health residential program*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Lund, Lori K. *The inclusion of children in family therapy: A content analysis*. Colorado State University, Fort Collins, CO. (IL)

Lundberg, Kristen S. *Comparison of depressed versus non-depressed male batterers*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Mudd, James M. *Solution-focused therapy and communication skills learning: An integrated approach to couples therapy*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Paris, Elani. *Marriage and family therapy interns' experience of growth*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Purdum, Elaine Winifred. *Traditional or egalitarian? A study of marital enrichment programs*. Colorado State University, Fort Collins, CO. (IL)

- Ward, Michelle R. *Clients' perceptions of the therapeutic process: A common factors approach*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Young, Kathryn Scott. *Barriers to counseling: Mexicans and other Hispanics compared with non-Hispanic whites*. University of Georgia, Athens, GA. (IL,E)
- Ziemba, Scott James. *Barriers to mental health utilization for low-income individuals*. Colorado State University, Fort Collins, CO. (IL)

Family History

- Grames, Heath A. *Chronic mental illness: A family's perspective*. University of Nebraska, Lincoln, NE. (IL)
- McKay, Katrina Ervin. *The locus of control of mothers and daughters: A comparison of African American dyads in public and non-public housing*. Florida State University, Tallahassee, FL. (IL)

Gerontological Services

- Campbell, Micah Sean. *The life of Mary: Using a life history approach to explore the identity formation of a woman diagnosed with Alzheimer's disease*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Dunne, Kathleen Ann. *Nursing home residents' social relationships with staff members*. University of Missouri, Columbia, MO. (IL)
- Fruhaufl, Christine. *The relationship of age and subjective well-being: A test of Kozma's theoretical model*. University of Akron, Akron, OH. (IL)
- Juozapavicius, Kevin. *A reflective study of Alzheimer's caregivers*. Oklahoma State University, Stillwater, OK. (IL)
- Kelly, Loretta A. *The effects of residential satisfaction on elders' subjunctive well-being*. Colorado State University, Fort Collins, CO. (IL)
- Williams, Ishan Sadiqa Canty. *The caregiving career among African American caregivers: After institutionalization and the death of the care recipient*. University of North Carolina, Greensboro, NC. (M)

Individual and Family Development

- Al-Lawati, Fatma Anwar. *Parent and teacher expectations for early childhood education in Oman*. Utah State University, Logan, UT. (M,E)
- Bayly, Della Marie. *Welfare to work: Listening to silent voices*. University of Idaho, Moscow, ID. (IL)
- Blevins, Kimberly R. *Assessment of father and mother perceptions of father involvement and marital satisfaction*. University of Arkansas, Fayetteville, AR. (IL)
- Bookout, J. Caroline. *Longitudinal analysis of sibling support around the transition to parent care*. University of Georgia, Athens, GA. (IL,E)
- Boroda, Allison Debra. *A comparison between the social interactions of infants of adolescent and adult mothers*. Texas Tech University, Lubbock, TX. (IL)
- Brosi, Whitney A. *Grandparents raising grandchildren: Residential and non-residential grandparents in Arkansas*. University of Arkansas, Fayetteville, AR. (IL)

- Chang, Chih-Ying Cynthia. *Children's stress behavior and developmentally appropriate practice in family childcare homes*. Utah State University, Logan, UT. (M,E)
- Cole, Kelly Anne. *The experiences of sisters of gay men*. University of Missouri, Columbia, MO. (IL)
- Delatree, Esther. *A content analysis of the empirical research on gender differences in leadership behavior between 1970 and 1999*. Colorado State University, Fort Collins, CO. (IL)
- Dougherty, Jennifer L. *Work and family interactions: Marital, career, and overall life satisfaction of married young adults*. University of Arkansas, Fayetteville, AR. (IL)
- Doughty, Courtney Brooke. *Humans' physiological responses affected by the presence of a dog during a stressful situation*. Louisiana Tech University, Ruston, LA. (IL)
- Farmer, Suzanne Minichillo. *A qualitative and quantitative study of family relations among family literacy program participants: Interviews with past participants of Christian Appalachian projects in Garrard and McCreary Counties, Kentucky*. University of Kentucky, Lexington, KY. (IL)
- Fitzharris, Jennifer Lynn. *The roles of parental involvement and parent-adolescent communication in adolescent sexuality*. Iowa State University, Ames, IA. (IL)
- Frame, Mary Darlene. *The relationship component of women's identity formation within two cultures: The relation between identity and general attachment in adult women*. Texas Tech University, Lubbock, TX. (IL)
- Ganzel, Barbara Lynn. *Fostering competence from birth to adolescence: The role of early home visiting, cumulative risk, and parenting*. Cornell University, Ithaca, NY. (IL,M)
- Goodman, Roger Meredith. *Middle and later life marriages: The role of marital processes in predicting marital instability trajectories*. The University of North Carolina, Greensboro, NC. (M)
- Gorres, Jennie L. *The relationship of parent-child sexual communication on adolescent partner communication and sexual behavior*. North Dakota State University, Fargo, ND.
- Grant, Elizabeth R. *The animated diagram as hybrid representation: Evidence from problem solving*. Cornell University, Ithaca, NY. (IL,M)
- Hamel, Eryn Daphne. *Relating children's social competence to maternal beliefs and management strategies of peer relationships*. Utah State University, Logan, UT. (M,E)
- Hawley, Rachel Noelle. *Work satisfaction among women in dual-earner marriages*. University of Tennessee, Knoxville, TN. (IL)
- Hayes, Sherrill Watson. *The everyday interactions of North American preschoolers and their fathers: Gender, social class, and mothers' influence on accessibility and engagement*. University of North Carolina, Greensboro, NC. (M)
- Heater, Deborah J. *Mentoring at-risk youth: An interventions for skill building in problem solving, decision making, and conflict resolution*. Utah State University, Logan, UT. (M,E)
- Jones, Buffey Michelle. *Sibling relationships in early adulthood*. University of Arkansas, Fayetteville, AR. (IL)
- Kauffman, Melissa Hope. *Relational maintenance in long-distance dating relationships: Staying close*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Krambule, Sandra A. *Transitions during university life: Academic persistence for married and single students*. Utah State University, Logan, UT. (M,E)
- Lee, Donald Young. *The predictive validity of two interview measures of life events: The structured probe and narrative rating method and the life events and difficulties schedule*. Cornell University, Ithaca, NY. (IL,M)

- Lindberg, Jennifer Ann. *The mother in the middle: The effects of social support on working mothers' perceptions of their babies*. University of Kentucky, Lexington, KY. (IL)
- McMaken, Michael V. *The relationship between Erikson's developmental tasks and children identified as at-risk*. Utah State University, Logan, UT. (M,E)
- Miller, Andrea B. *A longitudinal analysis of the role of spanking in parenting practices, educational aspirations, and child self-esteem*. University of Arkansas, Fayetteville, AR. (IL)
- Morrison, Teri A. *Relations among mothers' parenting strategies, parenting stress, psychological well-being, and ratings of preschool child competence*. Utah State University, Logan, UT. (M,E)
- Mortensen, Dana K. Hawkins. *Promoting development through play: A migrant Head Start parent-child enrichment program*. Utah State University, Logan, UT. (M,E)
- Mulder, Carol D. *Interparental conflict resolution and parental warmth, harsh discipline, and inconsistent discipline*. University of North Carolina, Greensboro, NC. (M)
- Murray, Maresa Jane. *Age, religiosity, and education as predictors of AIDS knowledge in Zimbabwe*. Michigan State University, East Lansing, MI. (M)
- Olson, Kelly Jean. *Parental role in the development of adolescent sexual self-concept*. North Dakota State University, Fargo, ND.
- Perry, Marla A. *A look at the effects of Promise Jobs upon parental well-being*. Iowa State University, Ames, IA. (IL)
- Richardson, Angie Marie. *Adolescent mothers and social support: Formal and informal sources*. Iowa State University, Ames, IA. (IL)
- Romig, Kristen Mari. *Working with pediatric patients: A child life in-service*. Texas Tech University, Lubbock, TX. (IL)
- Smith, Kimberly J. *Parenting behaviors as predictors of self-esteem among African American adolescents*. University of Kentucky, Lexington, KY. (IL)
- Thomas, Anne. *Children's awareness, knowledge, and understanding of AIDS in Bahrain*. Utah State University, Logan, UT. (M,E)
- Toledo, Carlos. *An exploration of Cuban women's experience in the United States*. University of Georgia, Athens, GA. (IL,E)
- Traver, Susan Jill. *I've come closer to madness: Single parents after welfare reform*. University of Idaho, Moscow, ID. (IL)
- Villa, Laura Cecilia. *Ethnic identity development and social competence of Mexican American children*. Texas Tech University, Lubbock, TX. (IL)
- Warren, Heather Kiernan. *Regulating and monitoring emotion: A social-cognitive perspective*. Cornell University, Ithaca, NY. (IL,M)
- Watson, Wendy Kay. *An exploration of adult women's relationships and sexual behaviors*. Texas Tech University, Lubbock, TX. (IL)
- Webber, Michael S. *Perceived congruency of goals as predictors of marital satisfaction and adjustment in retirement*. Texas Tech University, Lubbock, TX. (IL)
- Westberg, Heather A. *Children's experience of parental divorce disclosure: A look at intrafamilial differences*. Utah State University, Logan, UT. (M,E)
- Williams, Azetta Z. *Single-fathers' influence on their children's social behavior: A study using the National Survey of Families and Households*. University of Kentucky, Lexington, KY. (IL)
- Youngker, Leslie Geabhart. *The psychological well-being of adolescent parents and their non-parenting peers*. Oklahoma State University, Stillwater, OK. (IL)

FAMILY AND CONSUMER RESOURCE MANAGEMENT

Doctorate

Child, Family, and Consumer Issues

- Galín, Michal. *You've got mail: The impact of E-mail use on an organization*. Cornell University, Ithaca, NY. (IL,M)
- Greder, Kimberly Ann. *A grounded theory to understand how low-income families meet their food and nutritional needs*. Iowa State University, Ames, IA. (IL)
- Haron, Sharifah Azizah. *Outsourcing household tasks in 1973, 1982, and 1993 among single-mother and married-mother families*. University of Missouri, Columbia, MO. (IL)
- Kohler, Julie K. *The anticipated consequences of covenant marriage laws for women: Understanding women's perspectives*. University of Minnesota, St. Paul, MN. (IL,M,E)
- Lune, Linda S. Vande. *Constraints, recent change, objective and subjective well-being: Urban, rural-nonfarm, and rural-farm households in Poland*. Iowa State University, Ames, IA. (IL)
- Magistad, Beth Ellen Maddock. *Work/family plans of expectant and new parents: An inductive analysis*. University of Minnesota, St. Paul, MN. (IL,M,E)
- Wachwithan, Poonsuk. *Examining intergenerational resource transfers: The relevance of individual and family characteristics and reciprocity concepts*. University of Minnesota, St. Paul, MN. (IL,M,E)
- Xia, Yan. *Chinese adolescents' involvement in family decision-making process and its relationship with parent-adolescent relationship*. University of Nebraska, Lincoln, NE. (IL)
- Xiong, Zha Blong. *Hmong American parent-adolescent problem-solving interactions: An analytic induction analysis*. University of Minnesota, St. Paul, MN. (IL,M,E)
- Zhou, Zhi. *The relationship between pre-school children's emergent literacy status and home literacy activities*. University of Nebraska, Lincoln, NE. (IL)

Consumer Economics

- Elgin, Linda A. C. E. *Phenomena of design influence on consumer involvement and image formation in a winery tourism setting*. Texas Tech University, Lubbock, TX. (IL)
- Huh, Eunjeong. *Leisure expenditure patterns of retired and near-retired households*. University of Missouri, Columbia, MO. (IL)

Financial Counseling/Planning

- Andersen, Jan D. *Financial problems as predictors of divorce: A social exchange perspective*. Utah State University, Logan, UT. (M,E)
- Bagwell, Dorothy Caroline. *Work and personal financial outcomes of credit counseling clients*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (NA)
- Gutter, Michael. *Racial differences in risky asset ownership*. Ohio State University, Columbus, OH. (IL)
- Kim, Jinhee. *The effects of workplace financial education of personal finances and work outcomes*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (M)

Master's*Child, Family, and Consumer Issues*

- Auh, Seongyeon. *Child care of welfare families in Iowa*. Iowa State University, Ames, IA. (IL)
- Dolezal, Eden E. *Understanding the demographic, medical, and social aspects of participants involved in cardiac rehabilitation programs in the central Illinois area*. Illinois State University, Normal, IL. (IL)
- Moon, Kyonghee. *Consumers' complaint processes: Discount stores*. Colorado State University, Fort Collins, CO. (IL)
- Paul, Jennifer JoHenle. *In the best interests of the family and the business: The impact of timing and sequencing on the use of adjustment strategies in family-owned business*. Iowa State University, Ames, IA. (IL)
- Poetker, Sara Jane. *An analysis of the rent-to-own market in Missouri*. University of Missouri, Columbia, MO. (IL)

Consumer Economics

- Kim, Sook-Hyun. *A comparison of consumers' store patronage between South Korea and the United States: Suggestions for the marketing strategy of the South Korean discount stores*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (NA)
- Sipe-Heath, Lorinda Gay. *Development and evaluation of "Make a Plan," an interactive multimedia computer program focusing on budgeting and shopping skills for low-income individuals*. Colorado State University, Fort Collins, CO. (IL)
- Thorson, Shari Lyn. *Revisiting international students use of credit cards*. Colorado State University, Fort Collins, CO. (IL)

Financial Counseling/Planning

- Etlina, Jennifer S. *Online shopping, credit card possession, and savings among upper college classmen*. Queens College, Flushing, NY. (D)
- McCown, Jill A. *Teenagers' attitudes and behavior regarding their spending, saving, and credit use habits*. Queens College, Flushing, NY. (D)
- Scantlebury, Cheryl. *Relationship between allowance and the savings and spending habits of middle school teenagers*. Queens College, Flushing, NY. (D)
- Banerjee, Madhumita. *A family resource management approach to retirement planning and its impact on satisfaction with finances*. Iowa State University, Ames, IA. (IL)
- Runyan, Jeffrey Mark. *An analysis of active management of an owned business*. University of Missouri, Columbia, MO. (IL)

Home Management

- Emrich-Yungtum, Stefanie J. *The perceived availability and utilization of employee benefits and work-life conflict*. University of Nebraska, Lincoln, NE. (IL)

FOODS

Doctorate

Dietetics

Litchfield, Ruth. *Implementation and evaluation of online instruction in the dietetics internship*. Iowa State University, Ames, IA. (IL)

Food Science

Albright, Susan Nesbitt. *Evaluation of processes to destroy Escherichia coli 0157:H7 in whole muscle home dried beef jerky*. Colorado State University, Fort Collins, CO. (IL)

Bauer, David Ross. *Individual differences in the ability to taste 6-n-propylthioracil: Their measurement and their impact on the perception of flavor and the perception of food tastiness*. Cornell University, Ithaca, NY. (IL,M)

Iwakiri, Yasuko. *Macrophage cyclooxygenase and inducible nitric oxide synthase expression in response to copper deficiency mediated oxidative stress and conjugated linoleic acid*. Colorado State University, Fort Collins, CO. (IL)

Singh, Suvrat Kumar. *Identifying and using value-added traits in GEM accessions (Latin American maize) to improve corn-belt dent corn*. Iowa State University, Ames, IA. (IL)

Song, Yongxia. *Characterization of biopolymers: Farley starch and soy protein*. Iowa State University, Ames, IA. (IL)

Master's

Dietetics

Adair, Alison Brooke. *The effect of an alternative method for delivering nutrition education to elementary school teachers on nutrition knowledge, attitudes, and behaviors*. University of Memphis, Memphis, TN. (IL)

Bonnell, Deborah Sue. *Long-term effectiveness of a family-based weight management program for children*. University of Alabama, Tuscaloosa, AL.

Bratland, Melissa C. Lewis. *A comparison of energy, macronutrients, and food variety in the diet of selected groups of American households around 1900 differing in location and economic status with the current guidelines and recent NHANES III food consumption patterns*. Illinois State University, Normal, IL. (IL)

Burstyne, Melanie. *A comparison of calcium intake in female athletes measured by food records and a brief food frequency questionnaire*. University of Memphis, Memphis, TN. (IL)

Caid-Jefferson, Mandy Renee. *Services marketing skills, service quality attitudes, and professional development needs of non-traditional dietitians*. Oklahoma State University, Stillwater, OK. (IL)

- Caperton-Kilburn, Charlotte. *Nutrition knowledge, behaviors, and attitudes of high school athletes and non-athletes enrolled in nutrition classes*. University of Memphis, Memphis, TN. (IL)
- Childers, Christopher Michael. *Perceived outcomes of urban high school students following group-selected nutrition education*. University of Memphis, Memphis, TN. (IL)
- Coleman, Tecla Ornetta Gia. *Attitude and beliefs of African American females toward traditional and ethnic foods*. Colorado State University, Fort Collins, CO. (IL)
- Cox, Kimberly. *The effects of exercise on nutritional status and quality of life in subjects with chronic renal failure requiring hemodialysis*. University of Memphis, Memphis, TN. (IL)
- Dennis, Karen K. *Wellness behaviors of students at Illinois State University*. Illinois State University, Normal, IL. (IL)
- Dent, Sarah Beth. *Cardiovascular disease-related risk factors in perimenopausal women*. Iowa State University, Ames, IA. (IL)
- Gibson, Elizabeth Marie. *Comparison of diabetic management people with type 2 diabetes who have not completed an education series on diabetes*. University of Alabama, Tuscaloosa, AL.
- Giudice, Susan V. *Determining barriers to and effective strategies for improving calcium intake among elderly African Americans in urban congregate meal sites*. University of Memphis, Memphis, TN. (IL)
- Koslo, Jennifer Louise. *The effect of dietary docosahexanoic acid and conjugated linoleic acid on prostaglandin synthesis and matrix metalloproteinases in pregnant rats*. Colorado State University, Fort Collins, CO. (IL)
- Kowloon, Kaman Lo. *A survey of advertisements for dietary supplements on popular magazines*. Louisiana Tech University, Ruston, LA. (IL)
- Ledoux, Tracey. *Assessment of nutrition care practices of a pediatric oncology hospital in Recife, Brazil*. University of Memphis, Memphis, TN. (IL)
- Oldham, Anne. *Serum cholesterol reduction through wellness program nutrition counseling tailored to stage of change*. Iowa State University, Ames, IA. (IL)
- Pano, Muriel E. *The effect of nutrition knowledge, income, education, dietary pattern, and participation in the Welfare to Work Program on food and security*. Illinois State University, Normal, IL. (IL)
- Powell, Jennifer E. *Eating disordered tendencies in collegiate female athletes in aesthetic versus non-aesthetic sports*. Illinois State University, Normal, IL. (IL)
- Prestwich, Laura Lynne. *Health and lifestyle among Ute Native American elders*. Utah State University, Logan, UT. (M,E)
- Randolph, Brent F. *Comparison of graduate and employer responses to a survey assessing the attainment of knowledge and performance competencies required of entry-level dietitians*. University of Memphis, Memphis, TN. (IL)
- Rodth, Pamela A. *Impact of consumers' health status on use and understanding of the "Nutritional Facts" label*. Louisiana Tech University, Ruston, LA. (IL)
- Smith, Angela Jo. *An assessment of the nutrient intake of college students at Illinois State University*. Illinois State University, Normal, IL. (IL)
- Snyder, Cecilia. *Diets and health behaviors of Americans who eat pork and chicken*. Iowa State University, Ames, IA. (IL)
- Sumner, Christine E. *Diabetes educator's perceptions of self-efficacy in their diabetes education programs*. Oklahoma State University, Stillwater, OK. (IL)

- Terrio, Kate Marie. *Osteoporosis knowledge, calcium intake, and weight-bearing physical activity in three age groups of women*. Colorado State University, Fort Collins, CO. (IL)
- Thornton, Amy Leigh. *Roadside relics: An historical study of surviving Indiana roadside diners*. Ball State University, Muncie, IN. (IL)
- Turner-McGrievy, Gabrielle Michelle. *Compressed video: The future of nutrition counseling and education*. University of Alabama, Tuscaloosa, AL.
- Watne, Laura Jane. *Development of a questionnaire to assess nutrition issues among collegiate female athletes*. Colorado State University, Fort Collins, CO. (IL)
- Webb, Martha Lynn. *An analysis of the nutritional content and amount of food purchased in a high school cafeteria*. East Tennessee State University, Johnson City, TN.
- Westcott, Jamie Lynn. *The growth of breastfed infants from birth through three years of life*. Colorado State University, Fort Collins, CO. (IL)
- Young, Laura Diane. *Development of a curriculum and baseline evaluation for a 12-week social marketing campaign targeting young children and their willingness to try new foods*. Colorado State University, Fort Collins, CO. (IL)
- Zheng, Yan. *Ethnicity and diet habits: Influence on bioavailability of soybean isoflavones in women*. Iowa State University, Ames, IA. (IL)

Food Science

- Allen, Nedra. *Bacterial analysis of ready-to-use vegetables and prepackaged salads in local Alabama counties*. Tuskegee University, Tuskegee, AL. (IL,M,E)
- Archie, Stephanie L. *The control of E. coli 0157:H7 in food*. Tuskegee University, Tuskegee, AL. (IL,M,E)
- Bonda, Vilija. *An online survey study on consumer attitudes toward bioengineered and irradiated foods*. University of Akron, Akron, OH. (IL)
- Burnham, Jennifer Alice. *Survival of Escherichia coli 0157:H7 during home-type drying of apple slices*. Colorado State University, Fort Collins, CO. (IL)
- Catchings, Cinda J. *Aqueous extracted peanut oil: An analysis of stability by chemical and sensory evaluation*. Tuskegee University, Tuskegee, AL. (IL,M,E)
- Chen, She. *Comparison of the physical, chemical, and sensory properties of butter made from milks differing in their atherogenicity index*. Iowa State University, Ames, IA. (IL)
- Chong EE-Fah. *Functional properties of food and non-food soy protein-based products*. Iowa State University, Ames, IA. (IL)
- Cotton, Julie Cristina. *Evaluation of continuous lactic acid fermentation using plastic composite support biofilm reactor and lactic acid recovery using emulsion liquid membrane extraction*. Iowa State University, Ames, IA. (IL)
- Crowe, Troy Willis. *Extrusion texturization of extruded expelled soybean flour*. Iowa State University, Ames, IA. (IL)
- Crowley, Mary Lynn. *Chef's attitudes toward technically-altered food: A study of awareness and willingness to purchase*. University of Akron, Akron, OH. (IL)
- Dial, Kimberly A. *Consumer knowledge of food safety and food safety techniques in McLean County and surrounding areas*. Illinois State University, Normal, IL. (IL)
- Early, Megan Elizabeth. *The development and evaluation of the interactive multimedia module "Make It Fun."* Colorado State University, Fort Collins, CO. (IL)
- Gordon, Angelia Denise. *A qualitative investigation of factors affecting safe food handling practices among restaurant personnel*. Colorado State University, Fort Collins, CO. (IL)

- Heriques, Ami Suzanne. *The effects of gum incorporation on the staling properties of multigrain bread*. University of Georgia, Athens, GA. (IL,E)
- Hu, Jiang. *Isolation and quantitative analysis of soybean saponins by high performance liquid chromatography*. Iowa State University, Ames, IA. (IL)
- Jiang, Yongyi. *Oxidatively stable industrial fluids based on soybean oil*. Iowa State University, Ames, IA. (IL)
- Keller, Anne Lynn. *The effect of conjugated linoleic acid and N-6: N-3 fatty acid ratio on cyclooxygenase-1 cyclooxygenase-2 RNA synthesis in pregnant rats*. Colorado State University, Fort Collins, CO. (IL)
- Ku, Katherine. *Pesticide residues in imported frozen fruits and vegetables*. California State University, Long Beach, CA. (M)
- Kuester, Julie. *Cost benefit analysis of the Oklahoma Expanded Food and Nutrition Education Program*. Oklahoma State University, Stillwater, OK. (IL)
- Lee, Yo-Hyun. *The effect of buttermilk fraction concentrates on growth and iron uptake and transport by CACO-2 cell cultures*. Utah State University, Logan, UT. (M,E)
- Li, Xiaoshan. *Influence of limited proteolysis, heat treatment, and pH on the whiteness of skim milk*. Utah State University, Logan, UT. (M,E)
- Lu, Yun. *Characterization of fumonisin B1-glucose nonenzymatic browning reaction, isolation and characterization of products*. Iowa State University, Ames, IA. (IL)
- Momon, Caroline. *Rheological, baking and sensory properties, and soft wheat flour: Effects of functional fruits and sucrose ester blends*. University of Kentucky, Lexington, KY. (IL)
- Mora, Adalgisa M. *Detection of Escherichia coli using Biosys 32 technique*. Tuskegee University, Tuskegee, AL. (IL,M,E)
- Nam, Seung Hee. *Affinity purification of bovine lactoferrin and bovine transferrin from whey using immobilized gangliosides*. Utah State University, Logan, UT. (M,E)
- Scoville, David Williams. *Development and evaluation of hazelnut scones*. Colorado State University, Fort Collins, CO. (IL)
- Segomelo, Keolebogile. *Changes in populations of bacteria inoculated on fresh pork and subjected to limited temperature abuse*. Colorado State University, Fort Collins, CO. (IL)
- Sharma, Deepti K. *Development and evaluation of a ready to eat extruded pasta and candy containing hydroponically grown sweet potato*. Tuskegee University, Tuskegee, AL. (IL,M,E)
- Shoroff, Subha. *Sensory evaluation of the thaw and serve blueberry muffins: A study of sensory quality and acceptability*. University of Akron, Akron, OH. (IL)
- Sugano, Mika. *Microbiological safety of raw fish served at Japanese sushi restaurants and antibacterial effects of condiments served with raw fish*. California State University, Long Beach, CA. (M)
- Wang, Li-Ping. *Pyridoxine depletion depresses B6 vitamers and aspartate aminotransferase activity but not growth in 3T3-L1 cells*. Colorado State University, Fort Collins, CO. (IL)
- Wang, Yue. *Improving thermostability of Aspergillus awamori glucoamylase by directed evolution*. Iowa State University, Ames, IA. (IL)
- Wenzel, Lana Candida. *Shelf stable for space applications*. Colorado State University, Fort Collins, CO. (IL)
- Williams, Kimberly Ann. *The continuing professional education activities of registered dietitians and dietetic technicians*. Oklahoma State University, Stillwater, OK. (IL)

HUMAN ENVIRONMENTAL AND HOUSING

Doctorate

Housing

- Amor, Mohamed Cherif. *Arab Muslim immigrants in the U. S. : Home environment between forces of change and continuity*. University of Missouri, Columbia, MO. (IL)
- Barry, David Charles. *Preferences of frail elders regarding ideal living environments*. University of Missouri, Columbia, MO. (IL)
- Nafis, Diane A. *The early baby boom age cohort: Housing and locational preferences and plans for the first 10 years of retirement*. Oregon State University, Corvallis, OR. (IL, www.umi.com)
- Wolford, Nancy L. *Universal design standards for single-family housing*. Oregon State University, Corvallis, OR. (IL, www.umi.com)

Master's

Housing

- De la Fuente, Laura. *Motivational orientation as predictor of workplace preference*. Cornell University, Ithaca, NY. (IL,M)
- Defenbaugh, Jane Suzanne. *Factors influencing retired active adult consumers' decision to purchase a manufactured home versus a conventional home: An economic and demographic analysis*. University of Georgia, Athens, GA. (IL,E)
- Duncan, Edith-Anne P. *Design of early ordinaries and taverns in Montgomery County, Virginia from 1773-1823*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (NA)

INSTITUTION, HOTEL, AND RESTAURANT MANAGEMENT

Doctorate

Food Service Administration

- Glover, Nancy Louise Sherman. *Environmental conditioning as a food service marketing strategy effects of pleasant ambient scents on patient satisfaction*. University of Southern Mississippi, Hattiesburg, MS. (IL)
- Jones, David. *A determination of interpersonal interaction expectation in international buyer-seller relationships*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Lambert, Laurel G. *The relationship between parents' behavioral intentions to encourage their lower elementary school-age children to participate in the National School Lunch Program*

and their children's actual participation. University of Southern Mississippi, Hattiesburg, MS. (IL)

LeBlanc, Yvette Marie. *A comparison of foodservice employees' and students' perceptions of satisfaction with school foodservice program.* University of Southern Mississippi, Hattiesburg, MS. (M)

Levins, Janet Ball. *Student satisfaction, student participation, and district change management activities associated with the implementation of a new menu system in Mississippi high schools.* University of Southern Mississippi, Hattiesburg, MS. (IL)

Hotel Management

Lee, Hyong-Ryong. *An empirical study of organizational justice: A mediator of the relationship among leader-member exchange and job satisfaction, organizational commitment, and turnover intentions in the lodging industry.* Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Tourism

Formica, Sandro. *Tourism attractiveness as a function of demand and supply interaction.* Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Hallab, Zaher A. *An exploratory study of the relationship between healthy living and travel.* Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Neal, J. *The effects of different aspects of tourism services on travelers' quality of life.* Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Master's

Food Service Administration

Franklin, Charlene. *Job satisfaction of certified dietary managers in Oklahoma.* Oklahoma State University, Stillwater, OK. (IL)

Mills, Juline. *Consumer attitude towards branded quick-service foods on domestic coach class in-flight menus.* University of North Texas, Denton, TX. (IL,M,E)

Hotel Management

Spielman, Daniel L. *Real Estate Investment Trust (REIT) as an exit strategy for bed and breakfast inn owners.* University of North Texas, Denton, TX. (IL,M,E)

Institutional Administration

Smith, James. *A pilot study: An assessment of the mobile meals program and its effect on the perceived well-being of the elderly.* Oklahoma State University, Stillwater, OK. (IL)

Restaurant Management

- Kim, Byeong-Yong. *An integration of relative importance into importance - Performance analysis*. Iowa State University, Ames, IA. (IL)
- Murphy, Kevin. *An analysis of the effect of corporation offerings on the turnover intentions of restaurant managing partners for Outback Steakhouse*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Tourism

- Filler, Eunice Jeraldine. *Strategic alliance between a bed and breakfast inn and a restaurateur: Impact on net income of the bed and breakfast*. University of North Texas, Denton, TX. (IL,M,E)

INTERDISCIPLINARY**Master's**

- Miller, Maryellen Britt. *Nutritional and developmental status of children adopted from India into U. S. families*. Louisiana Tech University, Ruston, LA. (IL)

INTERNATIONAL**Doctorate**

- Cole, Remileku Rakiatu. *The diffusion of innovations in agriculture rice technologies in West Africa—Approaches used in the case of the Gambia*. Cornell University, Ithaca, NY. (IL,M)
- Kareem, Omar Abdull. *Collaboration in developing online learning between two different countries: A case study*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Rivera, Winna T. *Factors influencing fruit and vegetable consumption among low-income Puerto Rican women*. Cornell University, Ithaca, NY. (IL,M)

Master's

- Lim, Youngok. *Marriage wage premiums for males in West Germany*. Cornell University, Ithaca, NY. (IL,M)

NUTRITION

Doctorate

- Alaimo, Katherine. *Consequences of food insufficiency for American children*. Cornell University, Ithaca, NY. (IL,M)
- Biloukha, Oleg O. *Food choice, attitudes to healthy eating, and dieting in an urban Ukranian population*. Cornell University, Ithaca, NY. (IL,M)
- Bonvillain, Jacinda Sue. *The use of self-efficacy in predicting weight-loss outcomes among college student in south Louisiana*. University of Southern Mississippi, Hattiesburg, MS. (IL,M)
- Britt-Rankin, Jo Jean. *Impact of a sixteen-week university-level nutrition education course upon dietary intake*. University of Missouri, Columbia, MO. (IL)
- Clegg, Deborah Joy. *Factors affecting glucoprivic feeding induced by 2-deoxy-D-glucose (2DG)*. University of Georgia, Athens, GA (IL,E)
- Deyhim, Farzad. *Effects of diets rich in phenolic compounds on bone in ovariectomized rats*. Oklahoma State University, Stillwater, OK. (IL)
- Dong, Ding. *Retinoid receptors and cellular retinoic acid binding proteins: Aspects of regulation and retinoid signaling*. Cornell University, Ithaca, NY. (IL,M)
- Edlfsen, Miriam Sara. *Understanding emergency feeding: Providers' perspectives*. Cornell University, Ithaca, NY. (IL,M)
- Everts, Helen Breitmaier. *The effects of dietary vitamin A on mitochondrial function and gene expression on diabetes-prone BHE/Cbd rats*. University of Georgia, Athens, GA. (IL,E)
- Giandomenico, Laurie. *A tale of two co-ops: Personal characteristics, food behaviors, and food consciousness in the food cooperative organizational context*. Cornell University, Ithaca, NY. (IL,M)
- Grediagin, Ann. *Effect of a 50-km ultramarathon on vitamin B-6 metabolism and plasma and urinary urea nitrogen*. Oregon State University, Corvallis, OR. (IL)
- Hewlings, Susan Joyce. *An eating disorder prevention program for preadolescent children*. Florida State University, Tallahassee, FL. (IL)
- Hilson, Julie Anne. *Maternal obesity and breastfeeding success*. Cornell University, Ithaca, NY. (IL,M)
- Holms, Tawni Welk. *Folate intake in older Oklahoma men: Perceptions and the effects of an intervention*. Oklahoma State University, Stillwater, OK. (IL)
- Huang, Zhixin. *Roles of copper in the differentiation, activation, and effector functions of human U937 promonocytic cells*. University of North Carolina, Greensboro, NC. (IL)
- Kelly, Melissa Rebekah. *Effects of phenolic phytochemicals on inducible nitric oxide synthase, DNA damage, and apoptosis*. University of North Carolina, Greensboro, NC. (IL)
- Landry, Reiko Yamada. *Characterization of Syndecan - 4 induction in mouse 3T3-F442A adipocytes*. Cornell University, Ithaca, NY. (IL,M)
- Lopez-Alarcon, Mardia Guadalupe. *Illness-induced anorexia in breast-fed infants. Role of interleukin-1 beta, tumor necrosis factor alpha and leptin*. Cornell University, Ithaca, NY. (IL,M)

- McCullum, Christine. *Mechanisms and effects of power within a community-based food security planning process: An empirical case study from New York's North Country*. Cornell University, Ithaca, NY. (IL,M)
- Molaison, Elaine Fontenot. *The use of stages of change to improve adherence with interdialytic weight gain recommendations in hemodialysis patients*. University of Southern Mississippi, Hattiesburg, MS. (IL,M)
- Mrdjenovic, Gordana. *Do children regulate energy intake precisely? A search through the forest of strong beliefs and weak evidence*. Cornell University, Ithaca, NY. (IL,M)
- Neufeld, Lynnette Marie. *Intrauterine stunting: The timing of linear growth faltering during gestation and indicators of risk in the mother*. Cornell University, Ithaca, NY. (IL,M)
- Reed, Barbara Ann. *Sales of food aid and other coping mechanisms to meet dietary needs among refugees in Uviva, Zaire, in 1996*. Cornell University, Ithaca, NY. (IL,M)
- Rhee, Sue Kyung. *Stable isotope studies of fatty acid metabolism in humans using high precision mass spectrometry*. Cornell University, Ithaca, NY. (IL,M)
- Schrimpf, Julie Elizabeth. *Mechanism of ellagic acid binding with bovine serum albumin: Influence of reaction temperature and added salt, detergents, polyphenols, and starch*. Florida State University, Tallahassee, FL. (IL)
- Suh, Jae Rin. *The regulation of folate catabolism*. Cornell University, Ithaca, NY. (IL,M)
- Swain, James. *Dietary proteins that influence nonheme iron bioavailability, iron status, and plasma total antioxidant status*. Iowa State University, Ames, IA. (IL)
- Tchoukalova, Yourka Dimova. *In vitro studies of magnesium deficiency and preadipocyte differentiation mechanism and interaction with thiazolidinediones*. University of Georgia, Athens, GA. (IL,E)
- Thies, Julie Lynne. *Analysis of a local food system policy: Evaluating implementation and impact*. University of Tennessee, Knoxville, TN. (IL)
- Waterland, Robert A. *Mechanisms underlying the persistent effects of divergent suckling-period litter size on the rat insulin axis*. Cornell University, Ithaca, NY. (IL,M)
- Xue, Bingzhong. *Agouti modulation of both adipocyte and pancreatic islet function via a Ca²⁺-dependent mechanism*. University of Tennessee, Knoxville, TN. (IL)
- Yoon, Ji-Young. *Food service systems management competencies of Korean dietitians*. Oregon State University, Corvallis, OR. (IL)
- Yuan, Jia-Huey. *The temporal response of chicken hepatic threonine dehydrogenase activity and plasma threonine concentration to threonine imbalance, and characterization to chicken threonine dehydrogenase*. Cornell University, Ithaca, NY. (IL,M)
- Zhang, Yan. *Bioavailability and biological affects of the isoflavone glycitein and isoflavone glucuronides: Role of glucuronides in human natural killer cell modulation in vitro*. Iowa State University, Ames, IA. (IL)

Master's

- Accettura, Nicole. *Micronutrient intervention in elderly nutrition programs*. University of Georgia, Athens, GA. (IL,E)
- Al-Athari, Buthaina. *Comparison of carbohydrate counting and exchange lists as meal planning tools for diabetic patients*. Indiana State University, Terre Haute, IN (IL)
- Almay, Jennifer R. *Beverage preferences of low-income preschool children: Relationship to growth, beverage availability and beverage preferences of the parent*. Michigan State University, East Lansing, MI. (M)

- Almond, Julie M. *Using focus groups to determine blue collar workers' perceptions regarding dietary practices and cancer prevention*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Alstyne, Peter Van. *Structural features of Apigenin in inhibition of cell cycle and proliferation in human colon cancer cell lines*. Iowa State University, Ames, IA. (IL)
- Bryson, Karen Lynn. *Development and application of a model to remain in WIC. and use course skills among nutrition personnel participating in a continuing education course*. University of Tennessee, Knoxville, TN. (IL)
- Annor, Bismark Ofobi. *Adults' response to novel foods: Results of focus groups*. University of Idaho, Moscow, ID. (IL)
- Arnold, Julie. *Fermentation characteristics of selected dietary substrates: A human in vitro study*. Michigan State University, East Lansing, MI. (M)
- Beeson, Amanda Peoples. *Evaluation of the Tanita leg-to-leg method of body composition analysis*. University of Southern Mississippi, Hattiesburg, MS. (IL)
- Beiseigel, Jeannemarie M. *Dietary intake and bone mineral density in young-adult females*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Bizik, Brian K. *High dietary phosphorus is not detrimental to bone health of young men, assessed by urinary deoxypridinoline, when calcium intake is at the recommended level*. Oregon State University, Corvallis, OR. (IL)
- Blake, Christine Elizabeth. *Emergence of food schema as an influence on food choice: A qualitative investigation of rural women's food choice*. Cornell University, Ithaca, NY. (IL,M)
- Blankenship, Jeanne D. *Impact of infant feeding choices on maternal body mass index at six months postpartum*. Oklahoma State University, Stillwater, OK. (IL)
- Breuer, Tami Ann. *The effect of eating behavior and menstrual health on bone injury rate in female athletes*. University of Nebraska, Lincoln, NE. (IL)
- Brooks, Mary Etta. *Improving dietary behavior tailored nutrition education messages to decrease fat and increase fruit and vegetable intake in a limited-income population in Forrest County, Mississippi*. University of Southern Mississippi, Hattiesburg, MS. (IL)
- Butterfoss, Dale Nepert. *Screening carotenoid availability from processed orange and green vegetables using in vitro digestion*. University of North Carolina, Greensboro, NC. (IL)
- Calva, Jeanne K. *The relationship between the American Dietetic Association's position in vitamin and mineral supplementation in the elderly and dietitians' actual attitudes and practices*. Northern Illinois University, Dekalb, IL. (IL)
- Carson, Diane Elizabeth. *The effect of glucosamine sulfate supplementation on serum copper, zinc, and c-reactive protein in patients with degenerative joint disease*. California State University, Long Beach, CA. (M)
- Catchings, April D. *Eating habits of African American high school students in rural Macon County, Alabama*. Tuskegee University, Tuskegee, AL. (IL,M,E)
- Chason, Tracy Lynn. *Nutrition and age-related hearing loss*. University of Georgia, Athens, GA. (IL,E)
- Chmielewski, Julie L. *Eating habits, physical activity, and risky behaviors of youth practicing weight control*. Michigan State University, East Lansing, MI. (M)
- Chung, Chia-Fen. *An inhibitory effect of tea and coffee on in vitro availability of zinc in wheat products*. Michigan State University, East Lansing, MI. (M)
- Cook, Melanie Ann. *The validation of a food frequency questionnaire for use in measuring food intake of low-income women*. Oklahoma State University, Stillwater, OK (IL)
- Covey, Laura Christine. *Written survey to compare the perceptions of diet quality and physical activity level between nutrition educators and limited resource clientele*. University of Nebraska, Lincoln, NE. (IL)

- Cowing, Brandy E. *Vitamin B6 decreases proliferation and DNA synthesis of human mammary carcinoma cells in vitro*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Dell'Italia, Noelle L. *Attitudes, knowledge, and consumption of milk among parents of WIC participants*. Queens College, Flushing, NY. (D)
- Diamond, Jamie B. *Factors affecting fruit and vegetable consumption in health care workers in institutions*. Queens College, Flushing, NY. (D)
- Doubrava, Christina M. *The effects of attitudes and knowledge of the Food Guide Pyramid on food consumption among recovering substance abuse adults*. Queens College, Flushing, NY. (D)
- Duke, Elizabeth R. *Diet, exercise, and menopausal attitudes of university female faculty and staff at varying stages of menopause*. Northern Illinois University, Dekalb, IL. (IL)
- Edstrom, Katarina Maria. *Continuities and changes in women's nutrition careers during midlife and older age: A qualitative ten-year follow-up study*. Cornell University, Ithaca, NY. (IL,M)
- Faello, Michele E. *Comparison of energy expenditure by doubly-labeled water to energy intake by four 1-day food records and three 24-hour telephone diet recalls*. California State University, Long Beach, CA. (M)
- Fenley, Carmen A. *A comparison of the effects of Postpartum Adolescent Nutrition Education Classes (PANEC) with standard women, infants, and children (WIC) curriculum on nutrition knowledge, dietary intake, and selected anthropometric measures*. Stephen F. Austin State University, Nacogdoches, TX. (IL)
- Ferel, Diane Dziekan. *The promotion of health dietary practices in the university work-site setting*. Florida State University, Tallahassee, FL. (IL)
- Fisher, Heather Lynn McAfee. *Affects of dietary quercetin supplementation on oxidative stress in liver and colon of Sprague-Dawley rats*. University of Georgia, Athens, GA. (IL,E)
- Flanagan, Nicole Legendre. *Using multimedia education to increase consumer understanding of breast cancer prevention*. University of Nebraska, Lincoln, NE. (IL)
- Francois, Madiannithe Pierre. *Assessing the knowledge and use of food labels among diabetics*. Queens College, Flushing, NY. (D)
- Freel, Amy Elizabeth Boras. *Availability, credentials, and qualifications of nutrition providers of Division I intercollegiate athletic programs*. Ball State University, Muncie, IN. (IL)
- Gardner, Hope S. *Comparison of three different methods of assessing body composition of hemodialysis patients*. Louisiana Tech University, Ruston, LA. (IL)
- Guest, Jean E. *Feeding and swallowing status in children receiving living related liver transplantation: A retrospective study*. University of Nebraska, Lincoln, NE. (IL)
- Hargrove, Doris. *Vitamin E and protein metabolism in anemically stressed rats*. Tuskegee University, Tuskegee, AL. (IL,M,E)
- Hayashi, Remi. *An experimental study of social facilitation of food consumption*. Cornell University, Ithaca, NY. (IL,M)
- Haynes, Cheryl M. *An examination of attitudes and knowledge of food irradiation among educators and students of food-sevice-related majors*. Northern Illinois University, Dekalb, IL. (IL)
- Hermoyian, Christina Lynn. *Hepatocyte mitochondrial gene expression is influenced by dehydroepinandrosterone (DHEA), retionic acid, and thyriod hormone (T3) in Sprague-Dawley and BHE/Cdb rats*. University of Georgia, Athens, GA. (IL,E)

- Herring, Theresa Annette. *A survey to determine the knowledge, attitudes, and practices of college students in regard to soy protein and coronary heart disease*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Higbee, Dana Rebecca. *The opposing effects of omega-3-fatty acids upon growth of adipose tissue may be gender-dependent in vitro vs in vivo observations*. University of Georgia, Athens, GA. (IL,E)
- Hodges, Sonny Brandon. *Effects of soy protein on lipids and lipoprotein(a) in men and women*. Oklahoma State University, Stillwater, OK. (IL)
- Jantz, Cammy Sue. *Development and evaluation of an interactive multimedia breakfast nutrition education module*. Colorado State University, Fort Collins, CO. (IL)
- Kaushik, Supriya. *Vitamin E, total lipids, and cholesterol in cow's milk of varying fat content*. Oregon State University, Corvallis, OR. (IL)
- Kerekes, Lisa. *A survey of the safe food handling and food sanitation knowledge, attitudes, and behaviors of emergency food providers in the Akron area*. University of Akron, Akron, OH. (IL)
- Kim, Suyeon. *Angiotensin II increases leptin secretion in adipocytes via a prostaglandin-independent mechanism*. University of Tennessee, Knoxville, TN. (IL)
- Kimminau, Deborah D. *Identifying and measuring parents' goals for their children*. Northern Illinois University, Dekalb, IL. (IL)
- Knieja, Deborah A. *Stages of change to exercise and barriers to exercise in work-site employees*. Northern Illinois University, Dekalb, IL. (IL)
- Kubas, Karen Lynn. *Dietitians' knowledge, beliefs, and practices regarding exercise counseling*. University of Missouri, Columbia, MO. (IL)
- Kukuk, Dawn C. *Effects of dietary iron and ovariectomy on bone in skeletally mature operated rats*. Oklahoma State University, Stillwater, OK. (IL)
- Laing, Emma Elizabeth S. Monkhouse. *Bone mass and body composition changes in female adolescent gymnasts*. University of Georgia, Athens, GA. (IL,E)
- Lee, Seungmin. *Factors affecting calcium intake by female adolescents from low-income families*. University of Minnesota, St. Paul, MN. (IL)
- Lee, Sun-Ok. *Menhaden oil inhibits diethylnitrosamine-initiated and fumonlisin B1-promoted hepatocarcinogenesis in female Sprague-Dawley rats*. Iowa State University, Ames, IA. (IL)
- Lennon, Judy D. *A comparison of the eating patterns among different college majors at Northern Illinois University*. Northern Illinois University, Dekalb, IL. (IL)
- Li, Zhiying. *Hepatic microsomal and peroxisomal docosaheanoate biosynthesis during piglet development*. Iowa State University, Ames, IA. (IL)
- Libonati, Jerrod. *Molecular regulation of hyponia-induced apoptosis: Role of neuronal p52, Hsp 70 and zinc*. Florida State University, Tallahassee, FL. (IL)
- Lowery, Sarah Kathleen. *A double-blind, placebo-controlled study on the effects of a standardized ginseng extract on memory and well-being*. Cornell University, Ithaca, NY. (IL,M)
- MacDonald, Tiare Theresa. *Knowledge and behavioral change in nutritional workshop participants versus individual counseling participants*. Colorado State University, Fort Collins, CO. (IL)
- Manhica, Gilberto Manuel. *Effects of selenium on natural killer cells cytotoxic function, in vitro*. Cornell University, Ithaca, NY. (IL,M)
- Massoni, Jennifer Angela. *Does gymnastics participation affect growth and sexual maturation in adolescent, female gymnasts?* University of Georgia, Athens, GA. (IL,E)

- Masta Loudis, Angela. *Assessment of oxidative stress in athletes during extreme endurance exercise using deuterium-labeled vitamin E*. Oregon State University, Corvallis, OR. (IL)
- McDonald, Lauren. *Effects of dietary iron on bone in young mature female rats*. Oklahoma State University, Stillwater, OK. (IL)
- Moeller, Laura Elizabeth. *Effects of isoflavone-rich soy protein on regional body fat and lean tissue distribution perimenopausal women*. Iowa State University, Ames, IA. (IL)
- Moodie, Brenda Ann. *Managing and motivating food and nutrition in a selected group of three generations of African American women*. Cornell University, Ithaca, NY. (IL,M)
- Moore, Michelle. *Effects of selenium supplementation on plasma of milk of lactating women of habitually low selenium status*. Oregon State University, Corvallis, OR. (IL)
- Nelson, Mary Katharine. *Characterizing a food system: An analysis of the food and nutrition system in Tompkins County, New York*. Cornell University, Ithaca, NY. (IL,M)
- Nichols, Phyllis. *The relationship between food intake, demographic variables, and the formation of pressure ulcers in southeastern Oklahoma long term care facility residents*. Oklahoma State University, Stillwater, OK. (IL)
- Nix, Staci Nichole. *Enhancement and implementation of a 5' nucleotidase enzyme assay as an assessment tool for zinc status*. University of Georgia, Athens, GA. (IL,E)
- Nnyepi, Maria S. *The effect of the mother's choice and timing of complementary foods on the growth of children in Gabane, Botswana*. Michigan State University, East Lansing, MI. (M)
- Novick, Jeffrey S. *Effects of a nutrition education program on the related knowledge and behaviors of family practice residents*. Indiana State University, Terre Haute, IN. (IL)
- Nyberg, Ellisa Jean. *The relationship between time to eat school lunch and nutrient consumption*. University of Nebraska, Lincoln, NE. (IL)
- Obayashi, Saori. *Reliability and validity of survey questions on food label use, nutrition knowledge, and attitudes of U.S. adults: Diet and Health Knowledge Survey (DHKS) 1994-1995*. Michigan State University, East Lansing, MI. (M)
- Pace, Nicolette M. *Nutrition needs assessment of a multicultural public university's students, faculty, and staff*. Queens College, Flushing, NY. (D)
- Padgitt, Andrea Jane. *Identification of maternal determinants of low birth weight and growth retardation in the Michigan low-income population*. Michigan State University, East Lansing, MI. (M)
- Pan, Yuanji. *Effects of trace metal nutrient deficiency on oxidative DNA damage and apoptosis*. University of North Carolina, Greensboro, NC. (IL)
- Papakonstantinou, Emilia. *Assessment of perceptions of nutrition knowledge and disease using a group interactive system: The perception analyzer*. University of Georgia, Athens, GA. (IL,E)
- Passer, Julie A. *Vitamin and mineral supplementation practices of registered dietitians*. Northern Illinois University, DeKalb, IL. (IL)
- Phipps, Christie Lynn. *Chronic and acute effects of exercise on maternal immune status and immunological properties of breast milk*. University of North Carolina, Greensboro, NC. (IL)
- Pike, Kimberli Lloyd. *Nutrition practices, beliefs, and information sources of elite ice hockey players*. Ball State University, Muncie, IN. (IL)
- Pokress, Selma M. *The inclusion of quinoa in meal planning for the elderly*. California State University, Northridge, CA.

- Poulos, Sylvia Pete. *Dietary conjugated linoleic acid (CLA) during gestation and lactation alters adipocyte development in neonatal Sprague-Dawley rats*. University of Georgia, Athens, GA. (IL,E)
- Ramey, Lesley. *The effect of behavioral contracting on illness intrusiveness, self-efficacy, and dietary adherence in chronic dialysis patients*. Oklahoma State University, Stillwater, OK. (IL)
- Rasnake, Crystal M. *Food safety knowledge and practices of older adult participants of the Food Stamp Nutrition Education Program*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Roberson, Gwyndolyn D. *The Taste Explorers Club: Can nutrition education in the classroom successfully promote selection of fruits and vegetables among elementary school children*. East Carolina University, Greenville, NC. (IL)
- Rodrigue, Donna Barrios. *BMI and eating patterns: Number of eating occasions, omission of breakfast, and proportion of macronutrients*. University of Southern Mississippi, Hattiesburg, MS. (IL)
- Rogers, Tracy C. *Attitudes toward breastfeeding among adolescents participating in a WIC program in eastern North Carolina*. East Carolina University, Greenville, NC. (IL)
- Roller, Daretta Doreen. *Demographic and lifestyle variables affect bone mineral density in premenopausal women*. Oklahoma State University, Stillwater, OK. (IL)
- Rondini, Elizabeth Ann. *The influence of fermentable fibers of intestinal growth and tumorigenesis in mice*. Michigan State University, East Lansing, MI. (M)
- Santi, Andreina Gabriela. *A qualitative investigation of the nutritional goals parents have for their preschool children and the strategies they use to attain these goals*. Cornell University, Ithaca, NY. (IL,M)
- Sarvadi, Brittany Sher. *Replication study of eating strategies used by persons with head and neck cancers during and after radiotherapy*. East Tennessee State University, Johnson City, TN.
- Savage, Laura Kay. *Effect of zinc supplementation on iron, copper, and zinc status in premenopausal women*. Oklahoma State University, Stillwater, OK. (IL)
- Savoca, Margaret R. *Factors affecting food selection and eating patterns: Perspectives from people with type 2 diabetes mellitus*. University of North Carolina, Greensboro, NC. (IL)
- Schuck, Shona L. *The development and validation of an instrument to assess nutrition knowledge, diet-related beliefs, and food choice behaviors among low-income audiences*. University of Arkansas, Fayetteville, AR. (IL)
- Shotton, Andrea Dawn. *Dietary fat and iron modify cell proliferation and cytokine production in growing male rats*. Oklahoma State University, Stillwater, OK. (IL)
- Sindelar, Carrie Ann. *Serum lipid response to inclusion of omega-3 fatty acid enriched eggs in diets of physically active adults*. University of Nebraska, Lincoln, NE. (IL)
- Sinichi, Nasrin. *Effects of soy protein on indices of bone turnover in men and women*. Oklahoma State University, Stillwater, OK. (IL)
- Sowa, Mary. *Effects of nutrient intake and exercise on bone mineral density in pre-adolescent female gymnasts*. California State University, Long Beach, CA. (M)
- Standridge, Melissa K. *Angiotensin II regulation of adipocyte metabolism*. University of Tennessee, Knoxville, TN. (IL)
- Stern, Kara. *Food consumption behaviors and body image among college women*. Queens College, Flushing, NY. (D)

- Stimpson, Tara. *Physical activity, stages of change, self-efficacy, perceived needs and interests of cooperative extension family and consumer sciences agents and clientele*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Stockman, Linda Carol. *Factors predisposing body image dissatisfaction in children and preadolescents*. University of Southern Mississippi, Hattiesburg, MS. (IL)
- Timlin, Maureen Therese. *Evaluation of a nutrition education intervention on eating behavior change in cardiac rehabilitation patients*. University of Minnesota, St. Paul, MN (IL)
- Toure, Fanta. *Effects of fish and shrimp on iodine bioavailability in a cassava and millet-based staple food in Guinea*. Oklahoma State University, Stillwater, OK (IL)
- Tubbs, Hydee Elishia. *Weight preoccupation among females ages 18-23 years at the University of Idaho in 1989 and 1999*. University of Idaho, Moscow, ID. (IL)
- Waltz-Hill, Megan Marie. *Using multimedia nutrition education to increase consumer understanding of coronary heart disease*. University of Nebraska, Lincoln, NE. (IL)
- Wang, Bing. *Influence of soybean products and the non-steroidal anti-inflammatory drug Sulindac on colorectal cancer*. Michigan State University, East Lansing, MI. (M)
- Wendt, Ellen Beth. *Comparison of fat free and regular potato chips: Taste acceptability and gastrointestinal symptoms in 18-21 year-old female college students*. Ball State University, Muncie, IN. (IL)
- Weng, Yao-Lin. *Herbal supplements and retirement facility residents: Factors that predict usage*. Oregon State University, Corvallis, OR. (IL)
- Williams, Amy Michelle. *Dietary intake and nutritional risk of non-institutionalized elderly and their family caregivers living in Guilford County*. The University of North Carolina, Greensboro, NC. (IL)
- Yang, Weiliang. *Caffeine pharmacokinetics in women during rest*. Florida State University, Tallahassee, FL. (IL)
- Ying-Hui, Huang. *The effect of two levels of glucose ingestion on plasma pyridoxal 5'-phosphate concentration*. Oregon State University, Corvallis, OR. (IL)

TEXTILES

Doctorate

Textile Science

- Cao, Huantian. *Decolorization of textile dyes by white rot fungi*. University of Georgia, Athens, GA. (IL,E)
- Kim, Juhea. *Enhancement of seed coat fragment removal by enzymatic treatment*. University of Georgia, Athens, GA. (IL,E)
- Luo, Shuiyuan. *Physical and mechanical properties of poly(hydroxybutyrate-co-hydroxyvalerate) and its pineapple fiber-reinforced composites*. Cornell University, Ithaca, NY. (IL,M)
- Sarkar, Ajoy. *Kinetics of the enzymatic hydrolysis of cellulose by cellulase: A fundamental study*. University of Georgia, Athens, GA. (IL,E)

Zhang, Yeli. *Synthesis, characterization, and property study of hydrophilic-hydrophobic biodegradable hydrogels as a controlled drug delivery system*. Cornell University, Ithaca, NY. (IL,M)

Master's

Textile Economics

Lee, Keum Kyu. *A study of expenditures for household textiles, floor coverings, and furniture*. University of Missouri, Columbia, MO. (IL)
Lewis, Tasha. *Critical factors influencing the ability of Mexican apparel businesses to take advantage of NAFTA*. Ohio State University, Columbus, OH. (IL)

Textiles Production

Demarest, Nathan. *Evaluation of inflatable fabric cylinders for use in an elbow orthotic*. Cornell University, Ithaca, NY. (IL,M)

Textile Science

Campbell, Jacqueline. *A method for determining the concentration of dye in fabric using transmission spectroscopy*. University of Georgia, Athens, GA. (IL,E)
Chen, Zhengyu. *Electrospinning fibers from polymer melts*. Cornell University, Ithaca, NY. (IL,M)
Gao, Xiao. *Effects of water treatment on processing and properties of cotton/cellulose acetate nonwovens*. University of Tennessee, Knoxville, TN. (IL)
Lee, Seungsin. *A statistical model to predict pesticide penetration through nonwoven fabrics used as chemical protective clothing*. Cornell University, Ithaca, NY. (IL,M)
Mittal, Jayant. *Using renormalization to model the strength of carbon fiber epoxy strands*. Cornell University, Ithaca, NY. (IL,M)
Newsome, Chastity Danielle. *Evaluation of moisture barriers for fire fighting turnout gear, assessment of product failure, and test method development predicting failure modes*. University of Kentucky, Lexington, KY. (IL)
Partridge, Allison L. *Effects of fiber fitness, abrasion, and laundering on tensile strength and drape of 100% microdenier polyester fabrics*. University of North Carolina, Greensboro, NC. (IL)
Reclusado, Emilia. *Effectiveness and durability of antimicrobial finishes applied to woven textiles*. California State University, Long Beach, CA. (M)
Varanasi, Arindam. *Study of lipid distribution on textiles in relation to washing with lipases*. Cornell University, Ithaca, NY. (IL,M)
Wu, Yanping. *Evaluation of high performance capillary electrophoresis for separation and identification of reactive dyes in textile effluents*. University of Georgia, Athens, GA. (IL,E)

MISCELLANEOUS

Doctorate

Adult Learning and Human Resource Development

Banks, Felecia. *Success against the odds: The experience of academically at-risk students who graduate from post-secondary education*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Community Health

Channell, Robert James. *An investigation of the relationship between alcohol use and satisfaction with life among college students*. University of Tennessee, Knoxville, TN. (IL)

Goode, Laurie Anne. *An educational intervention to postpone sexual activity*. University of Tennessee, Knoxville, TN. (IL)

Hoyer, Jeffrey L. *Analysis of selected factors as predictors of surviving family members attitudes toward euthanasia*. University of Tennessee, Knoxville, TN. (IL)

Oakley, Jeffrey Scott. *An analysis of injury/illness events among warehouse and transportation workers performing lifting tasks within the food distribution industry*. University of Tennessee, Knoxville, TN. (IL)

Tuma, Jude NJI. *Caregivers' beliefs and attitudes associated with compliance to childhood immunizations in Bamenda, Cameroon*. University of Tennessee, Knoxville, TN. (IL)

Watkins, Cecilia Michelle. *A comparative study of health risk profile results between Seventh-Day-Adventist college students and public college students*. University of Tennessee, Knoxville, TN. (IL)

Exercise Physiology

Bearden, Shawn. *Oxygen uptake kinetics and leg electromyography during power transitions above and below the lactic acid*. Florida State University, Tallahassee, FL. (IL)

Biggerstaff, Kyle Dodd. *Effect of caloric expenditure on acute lipid and lipoprotein responses to aerobic exercise*. Florida State University, Tallahassee, FL. (IL)

Cheuvront, Samuel. *Thermoregulation in female marathon runners during prolonged treadmill exercise in three environments*. Florida State University, Tallahassee, FL. (IL)

McDonough, Paul. *An investigation of the maximal steady state workload in trained athletes*. Florida State University, Tallahassee, FL. (IL)

Exercise Science

Blevins, Jennifer. *The relationship between markers of disease severity in obstructive sleep apnea patients and hemodynamic and respiratory function during gradual exercise testing*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Human Resource Development

- Efrid, Stephanie Elizabeth. *Job satisfaction differences between generation X workers and older workers*. University of Tennessee, Knoxville, TN. (IL)
- Gibson, Ronald Herbert. *Comparison of training hard copy and computer job-aids: Using expert object technology*. University of Tennessee, Knoxville, TN. (IL)

Motor Behavior

- Fairbrother, Jeffrey. *The roles of response suppression and reinstatement in reminder trail effects in motor learning*. Florida State University, Tallahassee, FL. (IL)

Muscle Function

- Spangenburg, Epsen. *The effects of congestive heart failure and functional overload of rat skeletal muscle*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Organizational Development

- Tinelli, Archie. *Leaders and their learnings: What and how leaders learn as they transform organizations*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Public Policy

- Park, Jennifer. *Adolescent mothers' perceptions of support and receipt of government financial assistance: An examination of the NLS Y97 data file*. Florida State University, Tallahassee, FL. (IL)

Master's*Exercise Science*

- Stockunas, Michelle. *The effects of interval training and modest calorie restriction in the treatment of obesity*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Thorne, Robert. *Mechanical response tissue analysis: Inter- and intra-trial reliability in assessing bending stiffness of the human tibia in college aged women*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Human Resource Development

- Bright, Barbara Elaine. *Job satisfaction and burnout in clerical workers at an institution of higher education*. University of Tennessee, Knoxville, TN. (IL)

- Hutton, Marilyn Fisher. *Work ethic and job satisfaction among emergency medical service personnel*. University of Tennessee, Knoxville, TN. (IL)
- King, Wesley Scott. *Computer anxiety in an introductory computer course by Keirsej temperament styles, age, gender, and computer experience*. University of Tennessee, Knoxville, TN. (IL)
- Reddy, Tharulatha Yennam. *The impact of workplace design on training transfer as determined by the heuristic elicitation methodology*. University of Tennessee, Knoxville, TN. (IL)
- Smith, Benjamin Clayton. *Student perceptions of online and traditional classroom communication*. University of Tennessee, Knoxville, TN. (IL)
- Young, Suzanne Epperson. *Job satisfaction and job burnout of certified employee assistance professionals*. University of Tennessee, Knoxville, TN. (IL)

Muscle Function

- Lees, Simon James. *The effects of fatigue on glycogen, glycogen phosphorylase, and calcium uptake associated with the sarcoplasmic reticulum in rat skeletal muscle*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)
- Otis, Jeffrey S. *Metabolic profile of myosin heavy chain-based fiber types in the rat soleus after spinal cord transection*. Virginia Polytechnic Institute and State University, Blacksburg, VA. (E)

Recreation and Tourism

- Combs, Clarissa Marie. *Tennessee students with special needs: The status of therapeutic recreation in elementary individual education plans*. University of Tennessee, Knoxville, TN. (IL)

Research Methodology

- Wiers, Laurel A. *A qualitative study of the use of reflection in a research methods course*. East Carolina University, Greenville, NC. (IL)

PANEL OF REVIEWERS

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Purdue University

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Janet Laster
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Sharron Lennon
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North Dakota State University

Diane McComber
Iowa State University

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